

LOAN DOCUMENT

DTIC ACCESSION NUMBER	PHOTOGRAPH THIS SHEET	INVENTORY																				
	LEVEL																					
	DOCUMENT IDENTIFICATION																					
	DISTRIBUTION STATEMENT																					
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td colspan="2">ACCESSION FOR</td> </tr> <tr> <td>NTIS</td> <td>GRAM <input checked="" type="checkbox"/></td> </tr> <tr> <td>DTIC</td> <td>TRAC <input type="checkbox"/></td> </tr> <tr> <td>UNANNOUNCED</td> <td><input type="checkbox"/></td> </tr> <tr> <td colspan="2">JUSTIFICATION</td> </tr> <tr> <td colspan="2">BY</td> </tr> <tr> <td colspan="2">DISTRIBUTION/</td> </tr> <tr> <td colspan="2">AVAILABILITY CODES</td> </tr> <tr> <td>DISTRIBUTION</td> <td>AVAILABILITY AND/OR SPECIAL</td> </tr> <tr> <td style="height: 50px; vertical-align: bottom;">A-1</td> <td></td> </tr> </table>	ACCESSION FOR		NTIS	GRAM <input checked="" type="checkbox"/>	DTIC	TRAC <input type="checkbox"/>	UNANNOUNCED	<input type="checkbox"/>	JUSTIFICATION		BY		DISTRIBUTION/		AVAILABILITY CODES		DISTRIBUTION	AVAILABILITY AND/OR SPECIAL	A-1		DATE RECEIVED IN DTIC	
ACCESSION FOR																						
NTIS	GRAM <input checked="" type="checkbox"/>																					
DTIC	TRAC <input type="checkbox"/>																					
UNANNOUNCED	<input type="checkbox"/>																					
JUSTIFICATION																						
BY																						
DISTRIBUTION/																						
AVAILABILITY CODES																						
DISTRIBUTION	AVAILABILITY AND/OR SPECIAL																					
A-1																						
DATE RECEIVED IN DTIC		REGISTERED OR CERTIFIED NUMBER																				

HANDLE WITH CARE

19981223 060

UNCLASSIFIED

NO DISTRIBUTION
STATEMENT

NADC
Tech. Info.

APPENDIX 24
SIGNAL SORTER FLOW CHARTS
FINAL SOFTWARE REPORT
DATA ITEM NO. A005

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INTEGRATED ELECTRONIC WARFARE SYSTEM ADVANCED DEVELOPMENT MODEL (ADM)

780098724

PREPARED FOR
NAVAL AIR DEVELOPMENT CENTER
WARMINSTER, PENNSYLVANIA
CONTRACT N62269-75-C-0070



ELECTROMAGNETIC
SYSTEMS DIVISION

1 OCTOBER 1977

UNCLASSIFIED

APPENDIX 24
SIGNAL SORTER FLOW CHARTS
FINAL SOFTWARE REPORT
DATA ITEM A005

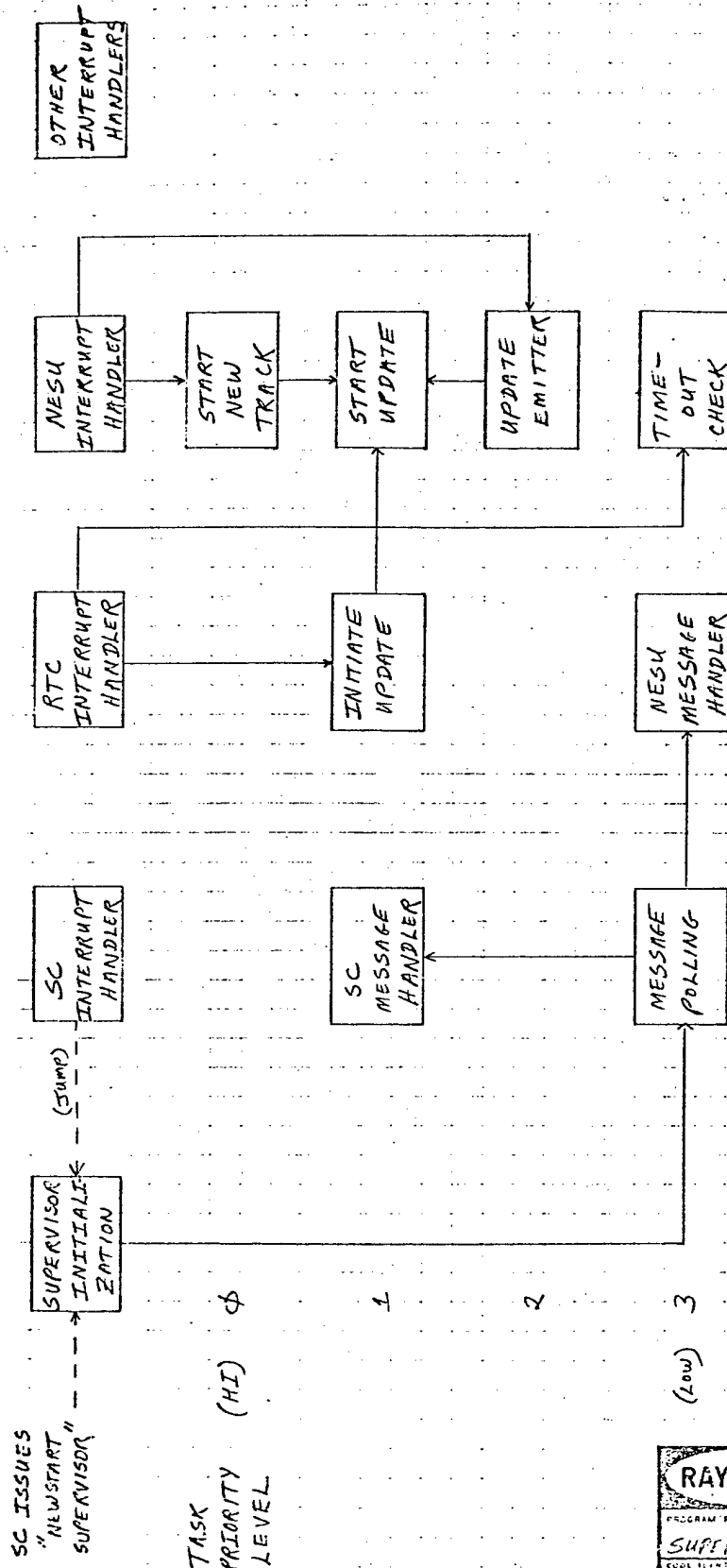
INTEGRATED ELECTRONIC WARFARE SYSTEM (IEWS)
ADVANCED DEVELOPMENT MODEL (ADM)

Contract No. N62269-75-C-0070

Prepared for:
Naval Air Development Center
Warminster, Pennsylvania

Prepared by:
RAYTHEON COMPANY
Electromagnetic Systems Division
6380 Hollister Avenue
Goleta, California 93017

1 OCTOBER 1977

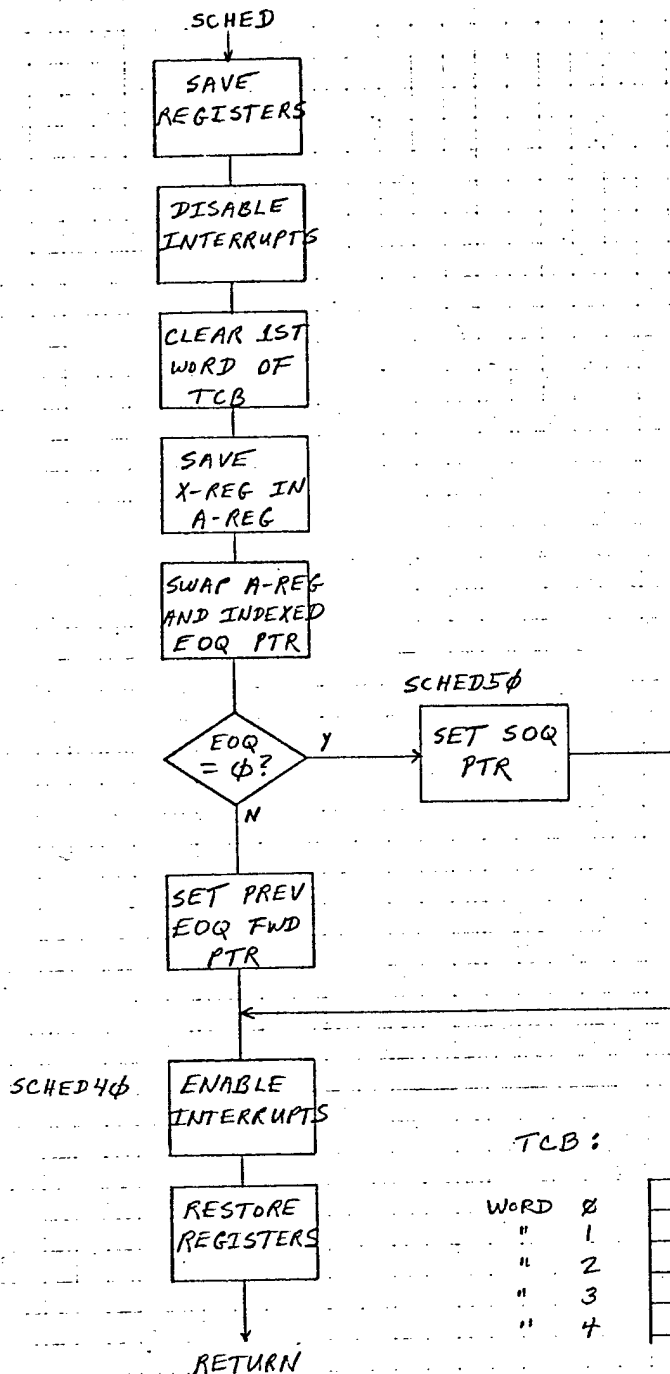


INTERRUPT PRIORITY

HIGHEST = 8 BUS HUNG
7 WATCHDOG TIMER EXPIRED
6 PANIC BUTTON
5 SC MESSAGE

4 NESH MESSAGE
3 REAL TIME CLOCK
2 IB > 3/4 FULL
LOWEST = 1 IB < 1/4 FULL

RAYTHEON		RAYTHEON COMPANY LEXINGTON, MASS. 02173	
PROGRAM ROUTINE SUBROUTINE ACRONYM		NEWS SORTER SUPV	
SUPERVISOR TASK SCHEDULING			
CODE BY: 49956	DATE: 30 APR 76		
NUMBER: 1	SHEET: 1	OF 1	



'TCB' MEANS 'TASK CONTROL BLOCK'

INDEXING IS BY TASK PRIORITY LEVEL

TCB:

WORD	0
"	1
"	2
"	3
"	4

USED BY SCHED
TASK ADDRESS
TASK ARG 1
TASK ARG 2
TASK ARG 3

CALL SEQ -

LDSX (ADDR OF TCB)

LDSB (TASK PRIORITY LEVEL)

JSUB (=SCHED)

- NORMAL RETURN

RAYTHEON

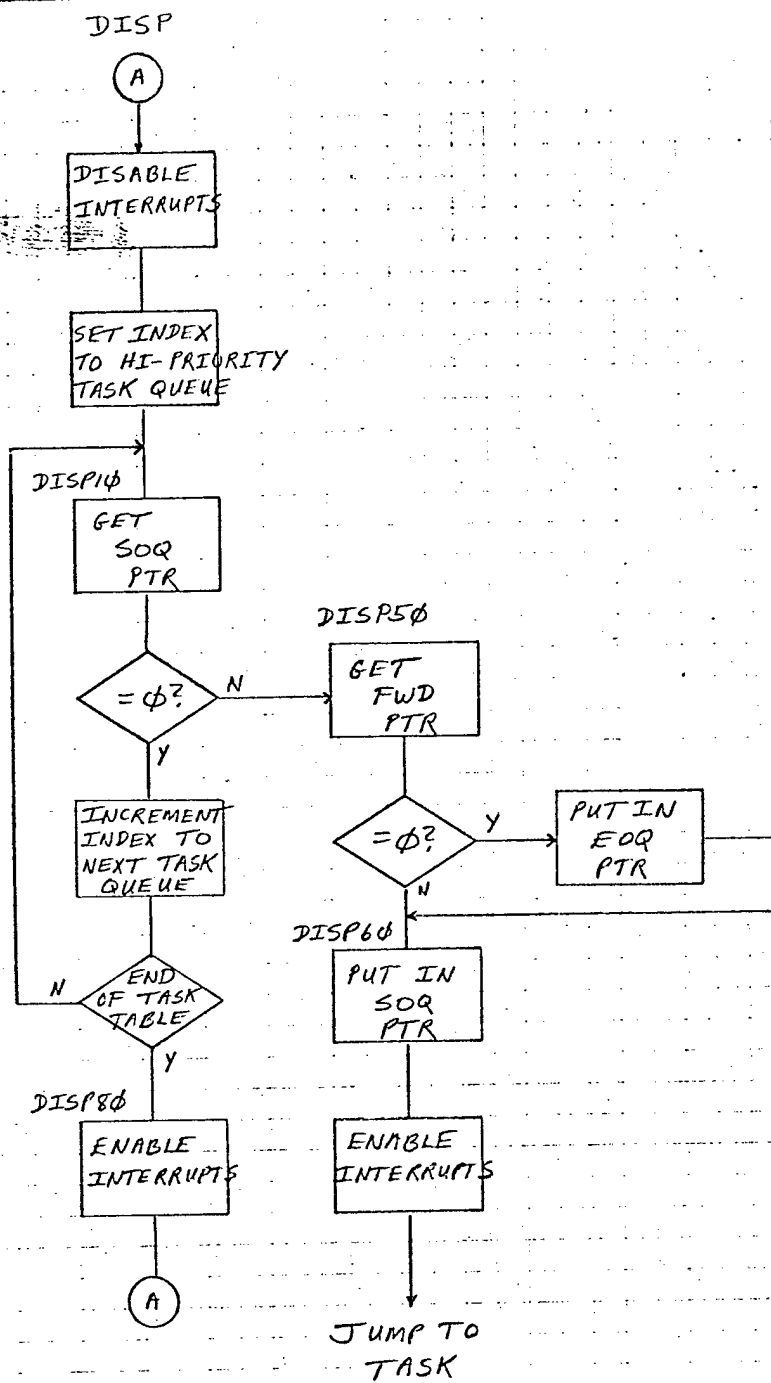
RAYTHEON COMPANY
LEXINGTON, MASS. 02173

PROGRAM ROUTINE SUBROUTINE ACRONYM IEWS SORTER SUPV

SCHEDULER SUBROUTINE

49956 PREPARED BY T. CHERNESKY DATE 9 APR 76

NUMBER 4 SHEET 1 OF 1



X-REG CONTAINS
ADDR OF TASK
CONTROL BLOCK

CALL SEQ -

JUMP (=DISP)

RAYTHEON		RAYTHEON COMPANY LEXINGTON, MASS. 02173	
PROGRAM/ROUTINE ACRONYM		IEW5 SORTER SUPV	
DISPATCHER			
CODE IDENT. NO.	PREPARED BY	DATE	
49956	T. CHERNESKY	9 APR 76	
NUMBER	5	SHEET 1 OF 1	

INITA

DISABLE
INTERRUPTSCLEAR SC
INTERRUPT
(LDSA (=20))INITIALIZE
S
REGISTERISSUE
INIT NESU
COMMANDSTOP
IBINITIALIZE
FIFOSTOP TC
(INIT TC
CMD)PUT IB
INTO RUN
MODECOMPUTE
CHECKSUM
OF SUPV
PCMACLEAR FREE
CORE BLOCKS
SQQGET TREE
CORE START
ADDR

1A

INITA10

LINK
UP
BLOCKADD 5
TO ADDR.END
OF FREE
CORE

N

INITA20

PUT 0 IN
FWD PTR
OF LAST BLOCKSET FREE
CORE EQQ
TO ADDR OF
LAST BLOCK

INITA30

CLEAR
IB
CAM

INITA60

CLEAR
TASK
QUEUESCLEAR
UPDATE
QUEUES

2A

RAYTHEON

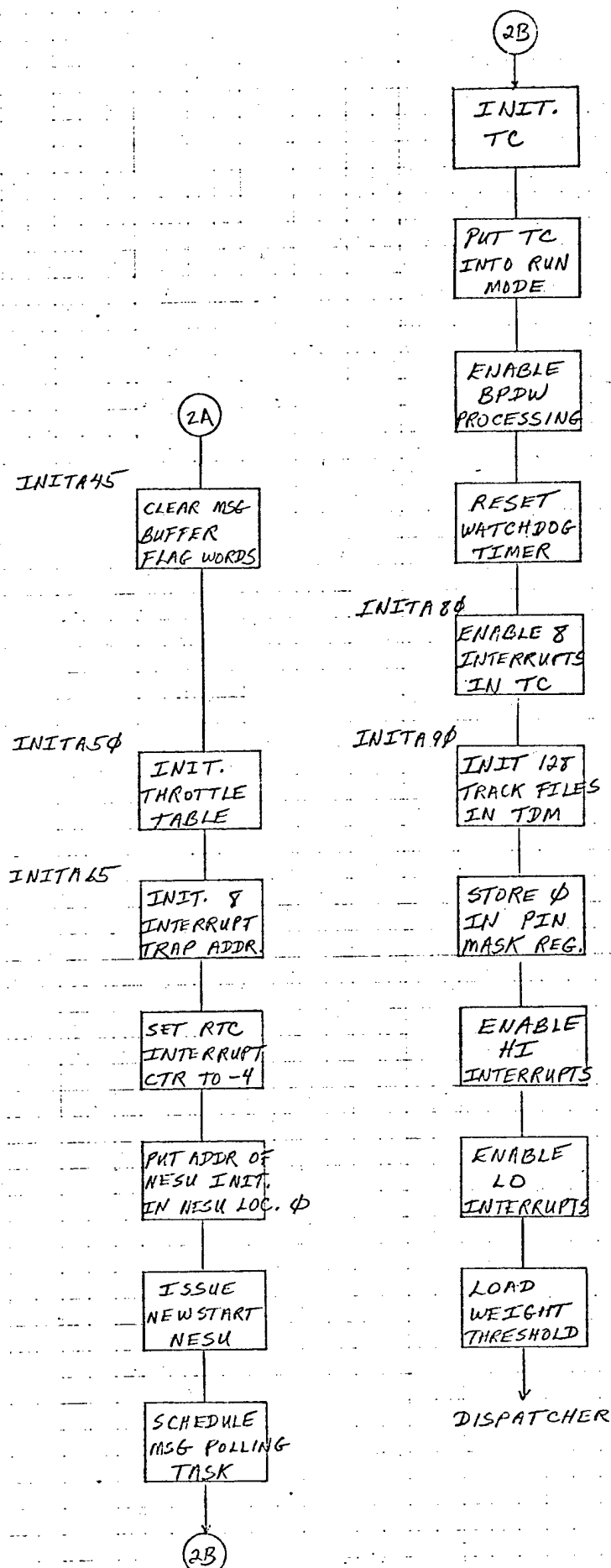
RAYTHEON COMPANY
LEXINGTON, MASS. 02173

PROGRAM ROUTINE SUBROUTINE ACRONYM JWS SORTER SUPV

INITIALIZATION MODULE

49956 T. CHERNESKY 15 JUN 76

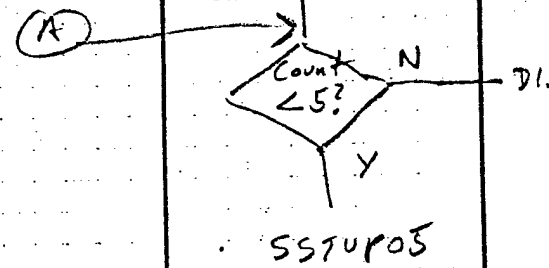
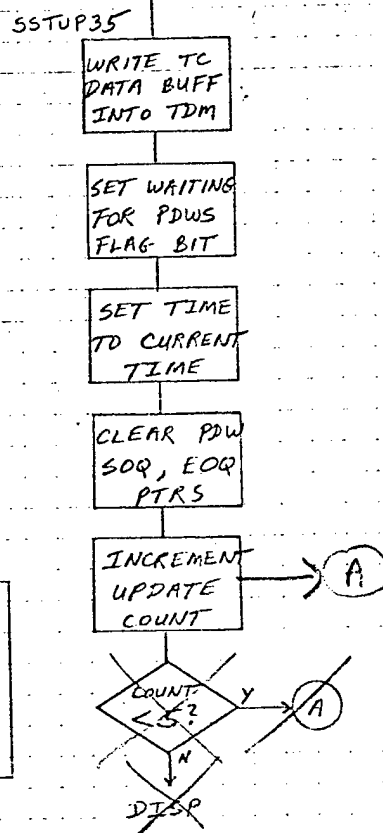
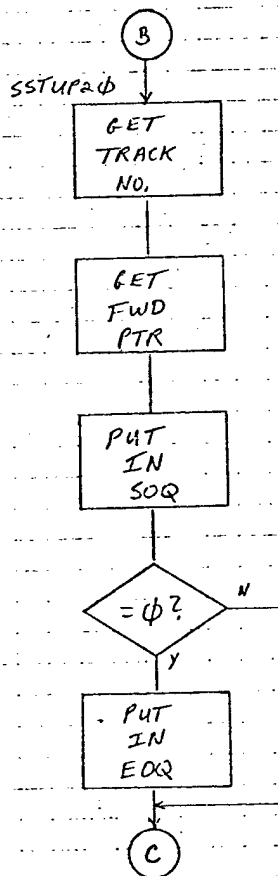
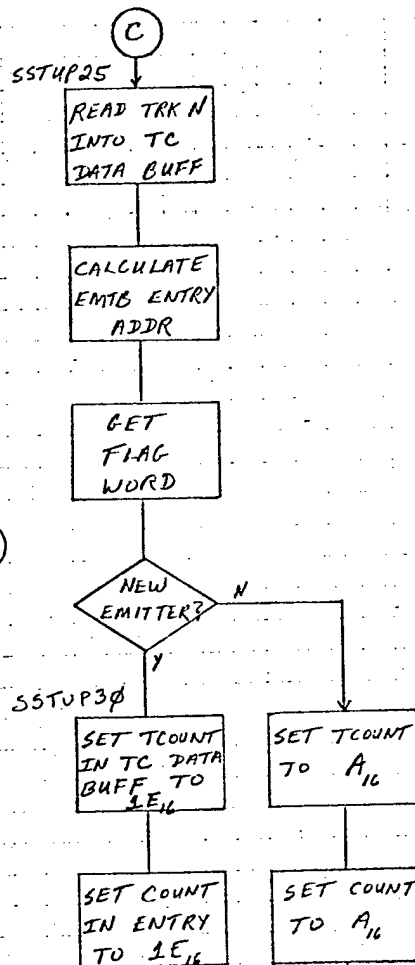
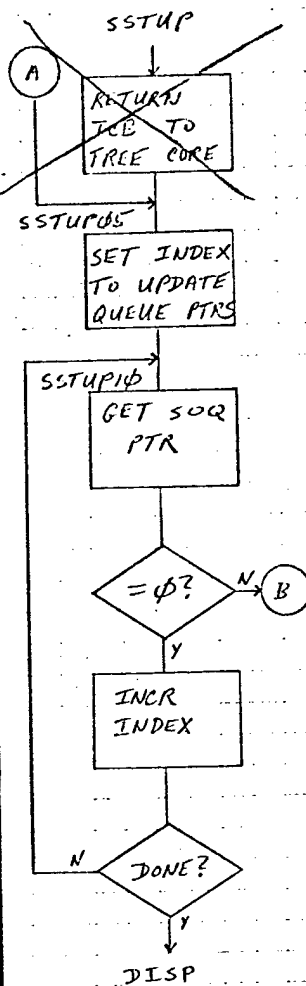
NUMBER 6 SHEET 1 OF 2



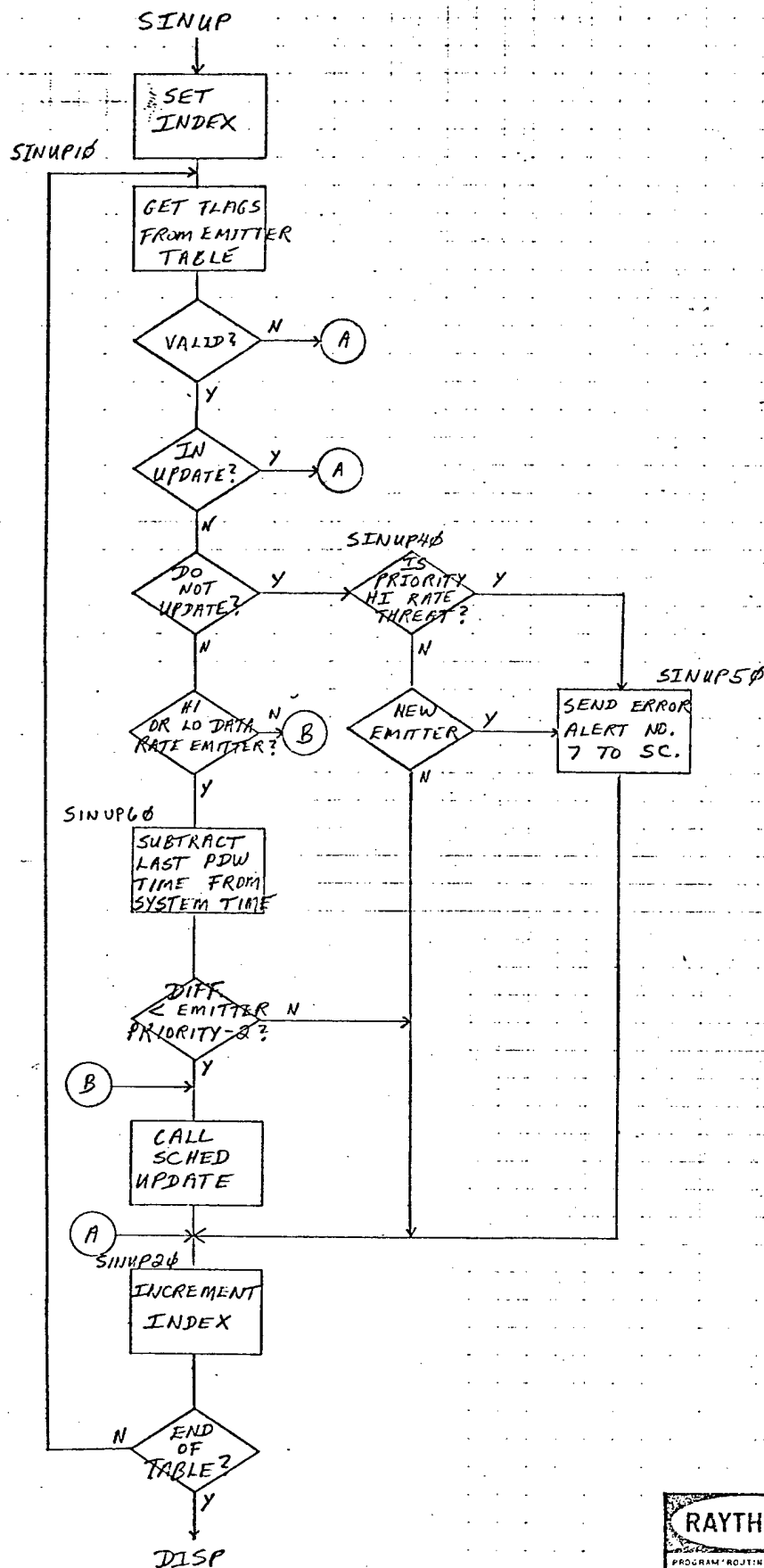
RAYTHEON		RAYTHEON COMPANY LEXINGTON, MASS. 02173	
PROGRAM ROUTINE SURROUTINE ACRONYM IEWS SORTER SHPV			
INITIALIZATION MODULE			
COD. 49956	PREPARED BY T. CHERNESKY	DATE 1 JUN 76	
NUMBER	7	SHEET 2 OF 2	

FLOW CHART

REMARKS



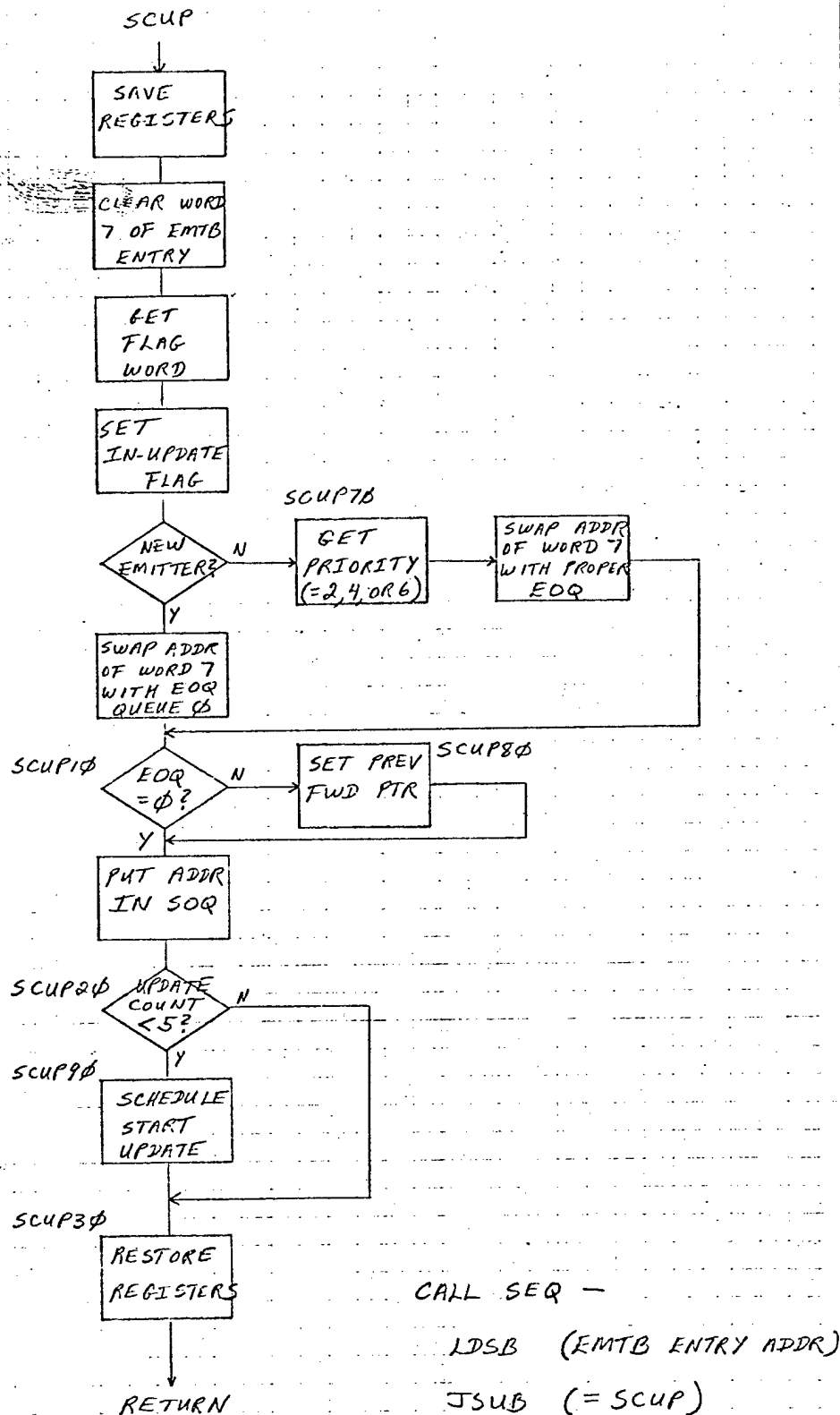
RAYTHEON		RAYTHEON COMPANY LEXINGTON, MASS 02173	
PROGRAM ROUTINE SUBROUTINE ACRONYM ILWS SORTER SUPV			
START UPDATE TASK			
49956	T. CHERNISKY	3 JUN 76	
NUMBER	8	SHEET	1 OF 1



EMITTER UPDATE INTERVALS

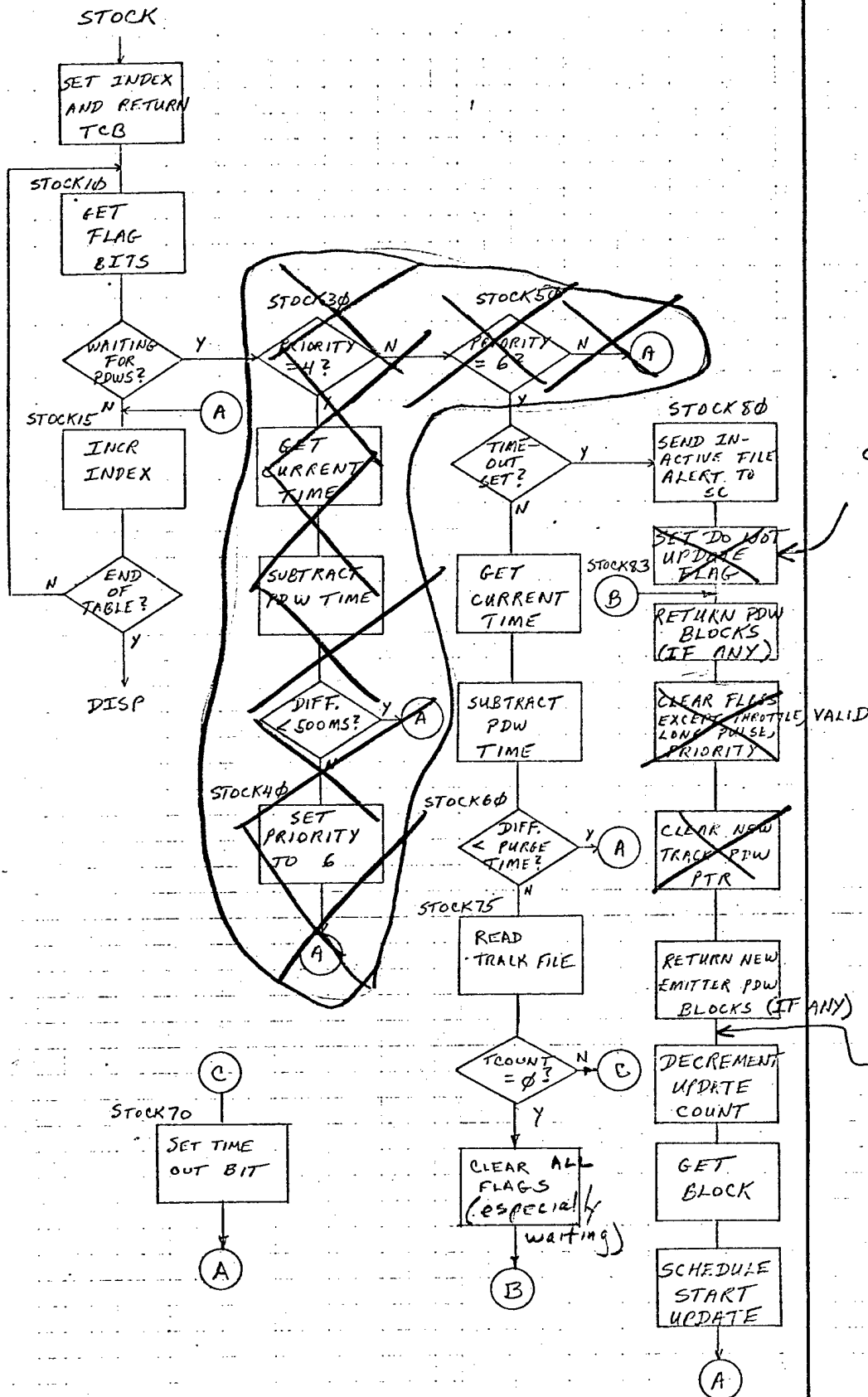
- 1 SEC
 - NEW EMITTER
 - HI RATE THREAT
- 2 SEC
 - HI RATE
- 4 SEC
 - LO RATE

RAYTHEON		RAYTHEON COMPANY LEXINGTON, MASS. 02173	
PROGRAM/ROUTINE/SUBROUTINE ACRONYM IEWS SGTEN SUIV			
INITIATE UPDATE TASK			
COPY COUNT NO. 49956	PREPARED BY T. CHKANESKY	DATE 1 JUN 76	
NUMBER 4		SHEET 1 OF 1	

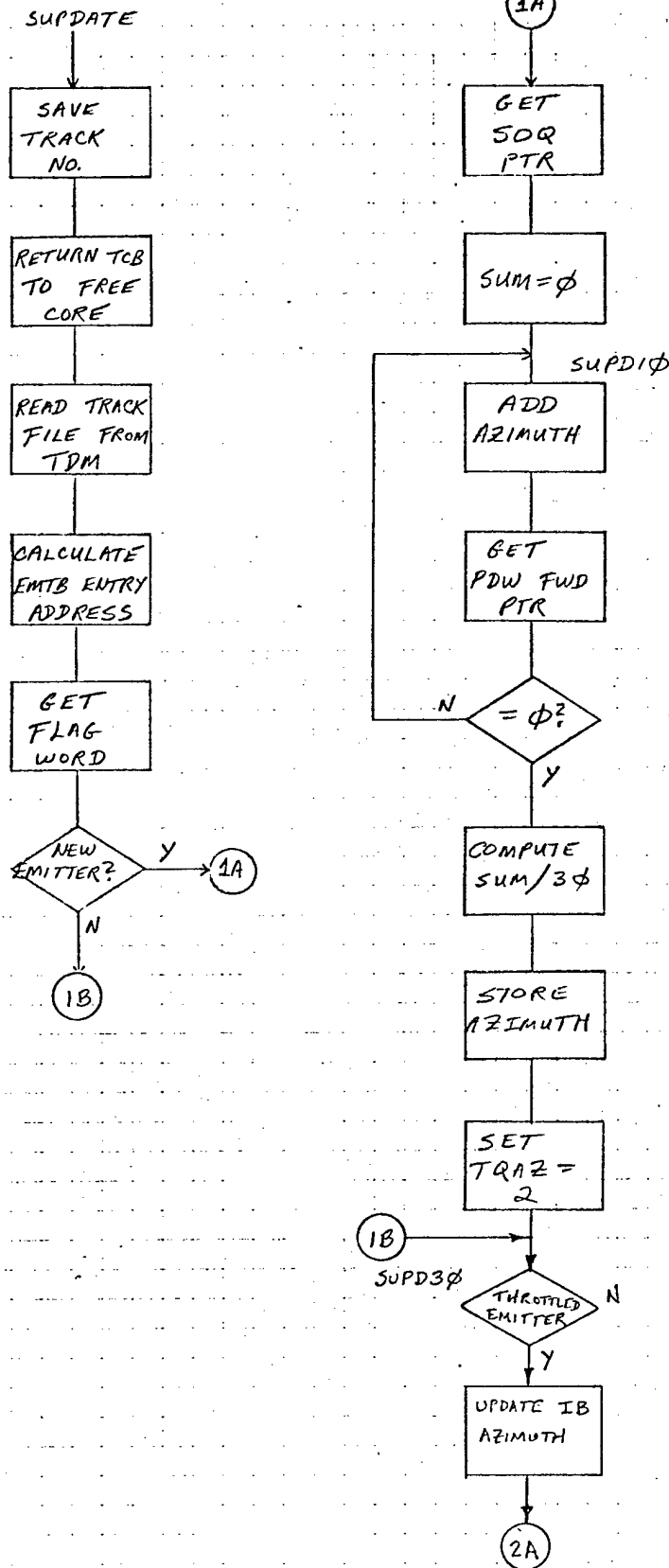


'EMTB' MEANS
'SUPV EMITTER
TABLE'

RAYTHEON		RAYTHEON COMPANY LEXINGTON, MASS. 02173	
PROGRAM ROUTINE SUBROUTINE ACRONYM TEWS SORTER SUPV			
SCHEDULE UPDATE SUBROUTINE			
CODING NO. 49956	PREPARED BY T. CHERNESKY	DATE 12 APR 76	
NUMBER 10	SHEET 1 OF 1		



RAYTHEON		RAYTHEON COMPANY LEXINGTON, MASS 02173	
PROGRAM ROUTINE SUBROUTINE ALGORITHM JEW'S SORTER SURV			
TIME OUT CHECK TASK			
COPIES 49956	PREPARED BY T. CHERNECKY	DATE 1 JUN 76	
NUMBER	11	SHEET	1 OF 1

AZIMUTH
CALCULATION

RAYTHEON

RAYTHEON COMPANY
LEXINGTON, MASS. 02173

PROGRAM ROUTINE SUBROUTINE ACRONYM ILWS SORTER SUPV

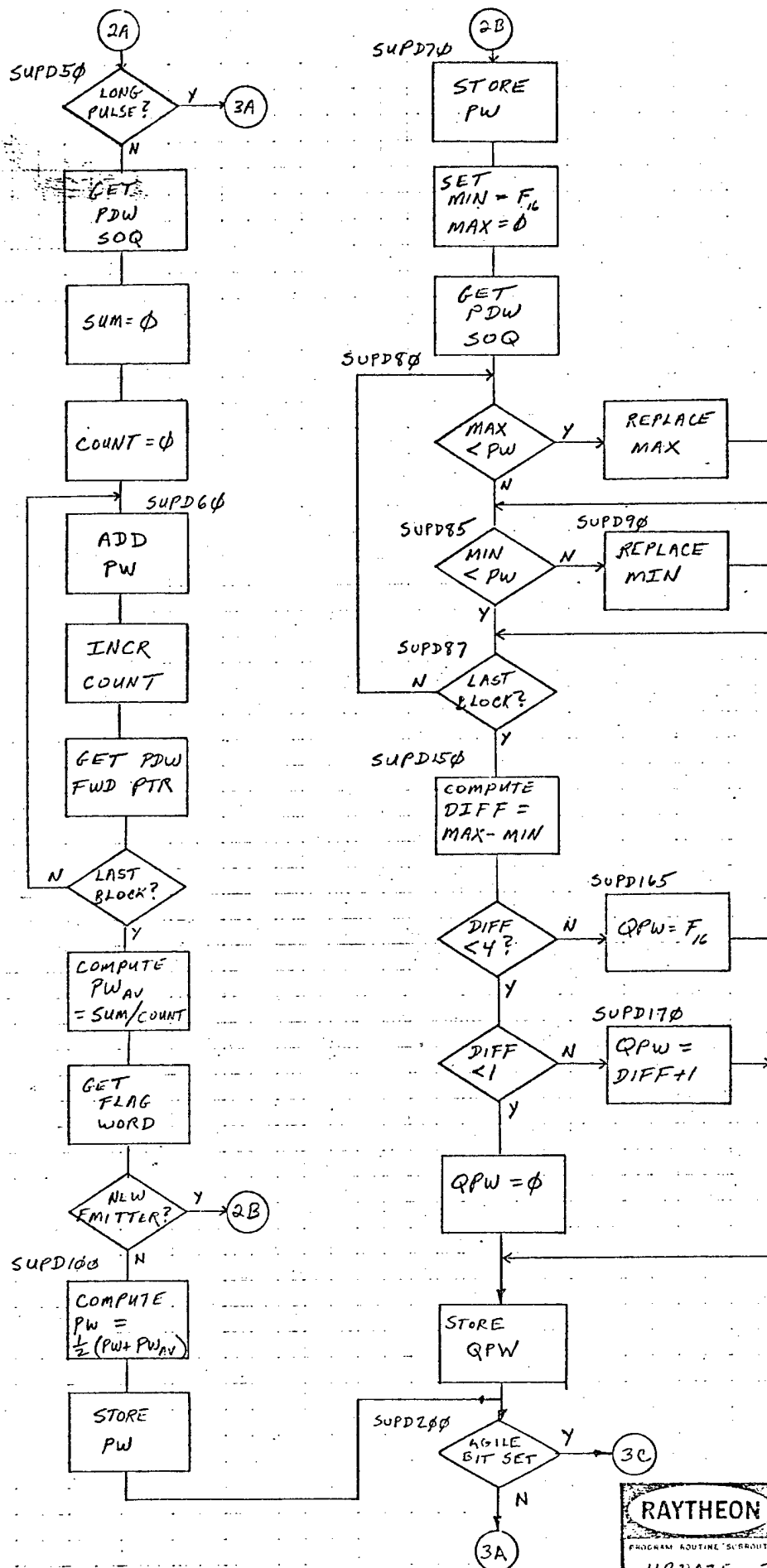
UPDATE TASK

CDDI TASK NO.
49956DATE
T. CHERNESKY 3 JUN 76

NUMBER

12

SHEET 1 OF 10

PULSE
WIDTH
CALCULATION

RAYTHEON

RAYTHEON COMPANY
LEXINGTON, MASS. 02173

PROGRAM ROUTINE/SUBROUTINE ACRONYM JEWS SORTER SUPV

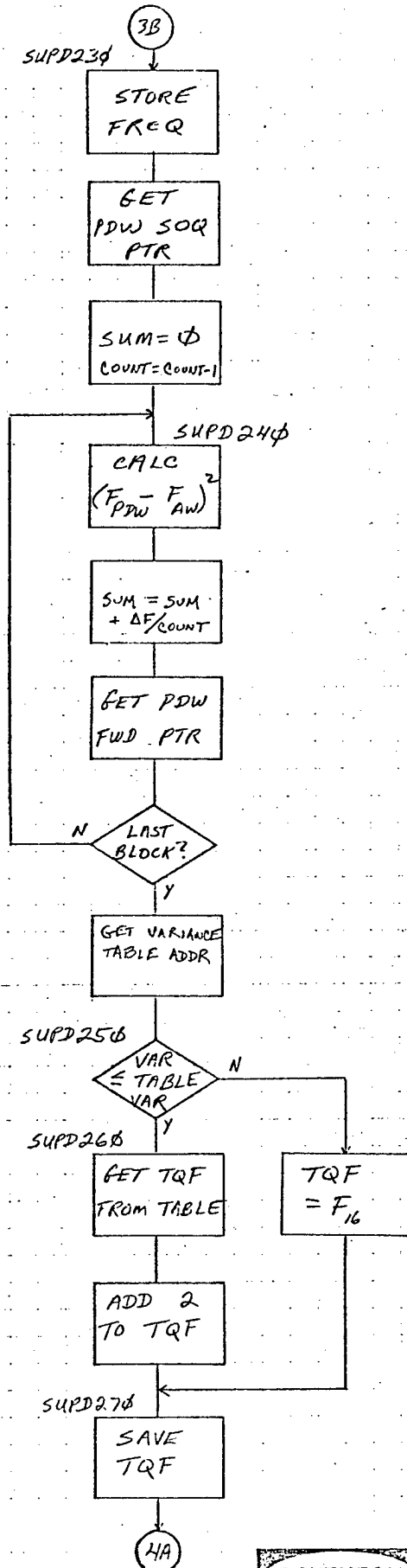
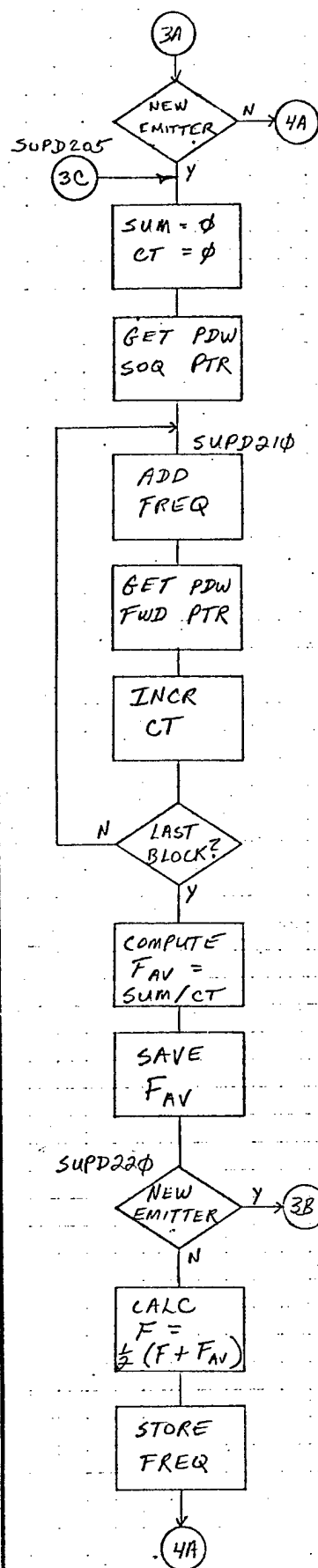
UPDATE TASK

CODE IDENT NO
49956PREPARED BY
T. CHERNESKYDATE
5 MAY 76

NUMBER

13

SHEET 2 OF 10

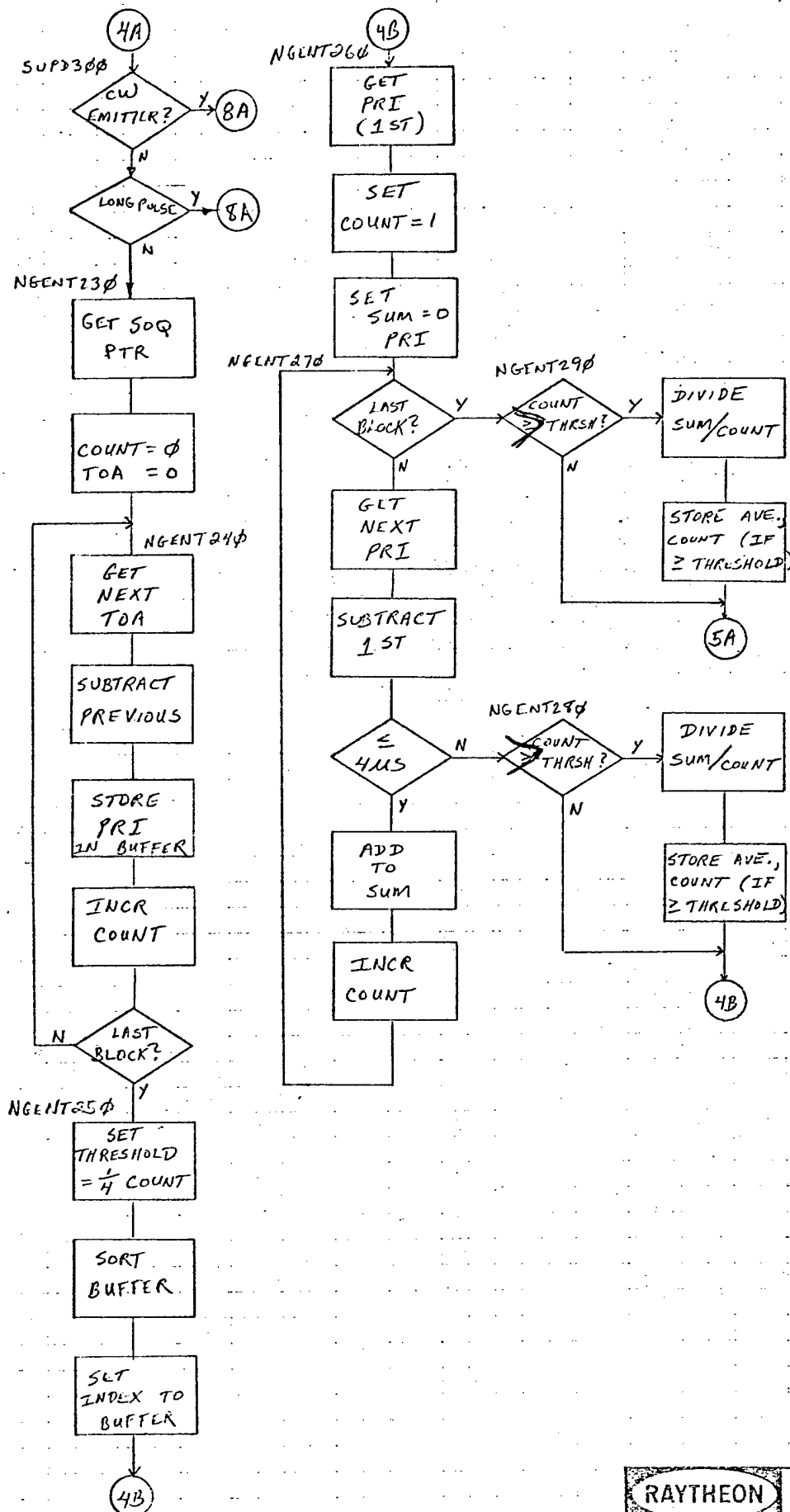
FREQUENCY
CALCULATION

RAYTHEON		RAYTHEON COMPANY LEXINGTON, MASS. 02173	
PROGRAM/ROUTINE SUPROUTINE ACROSYM		JEWS SORTER SUPV	
UPDATE TASK			
CODE 49956	PREPARED BY T. CHERNISKY	DATE 3 JUN 76	
NUMBER	14	SHEET 3	OF 10

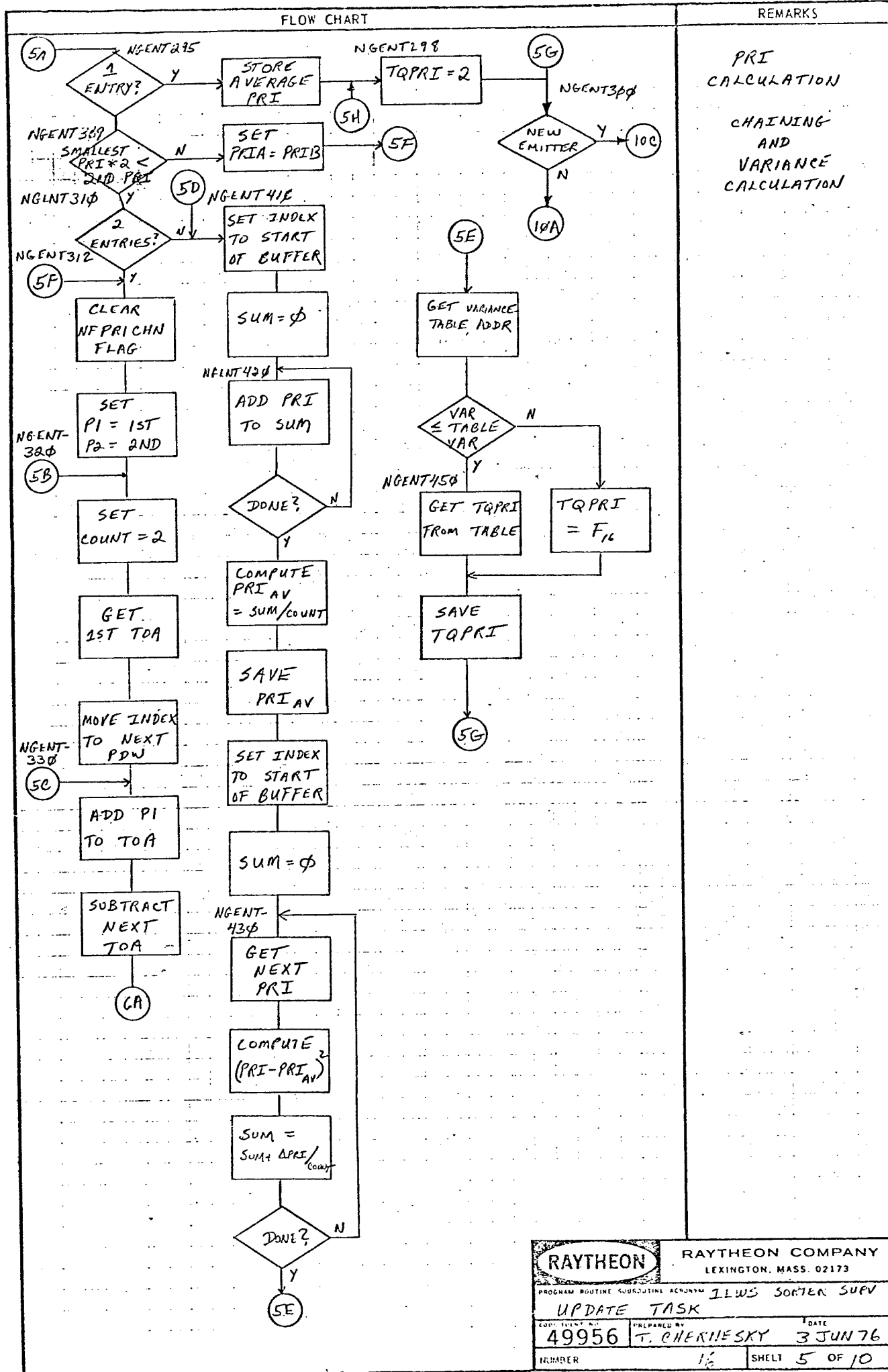
FLOW CHART

REMARKS

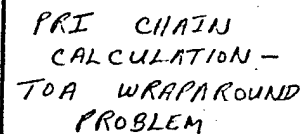
PRI
CALCULATION




RAYTHEON		RAYTHEON COMPANY LEXINGTON, MASS. 02173	
PROGRAM ROUTINE SUBROUTINE ACRONYM		ILWS SORTER SUPV	
UPDATE TASK			
CONTRACT NO. 49956	PREPARED BY T. CHESNEY	DATE 5 FEB 76	
NUMBER	15	SHEET	11 OF 10



REMARKS

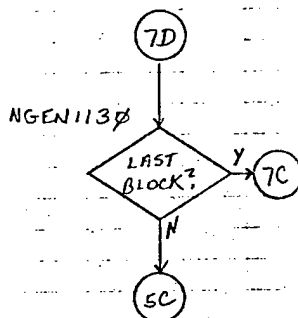
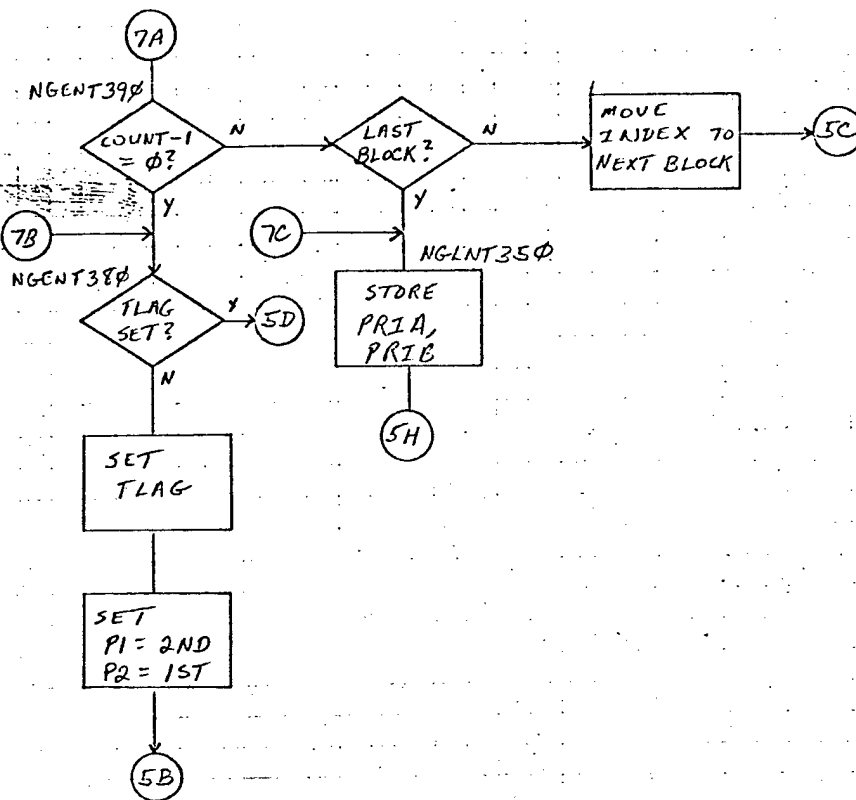


 RAYTHEON	RAYTHEON COMPANY LEXINGTON, MASS 02173	
	PROGRAM ROUTINE SHIN, UTINE ACROUYN <i>ILWS SORTER SUBV</i>	
UPDATE TASK		
CODE PLANE NO 49956	FACPARL BY T. CHERNESKY	DATE 7 MAY 76
NUMBER 17	SHEET 6	OF 10

FLOW CHART

REMARKS

PRI CHAIN
CALCULATION

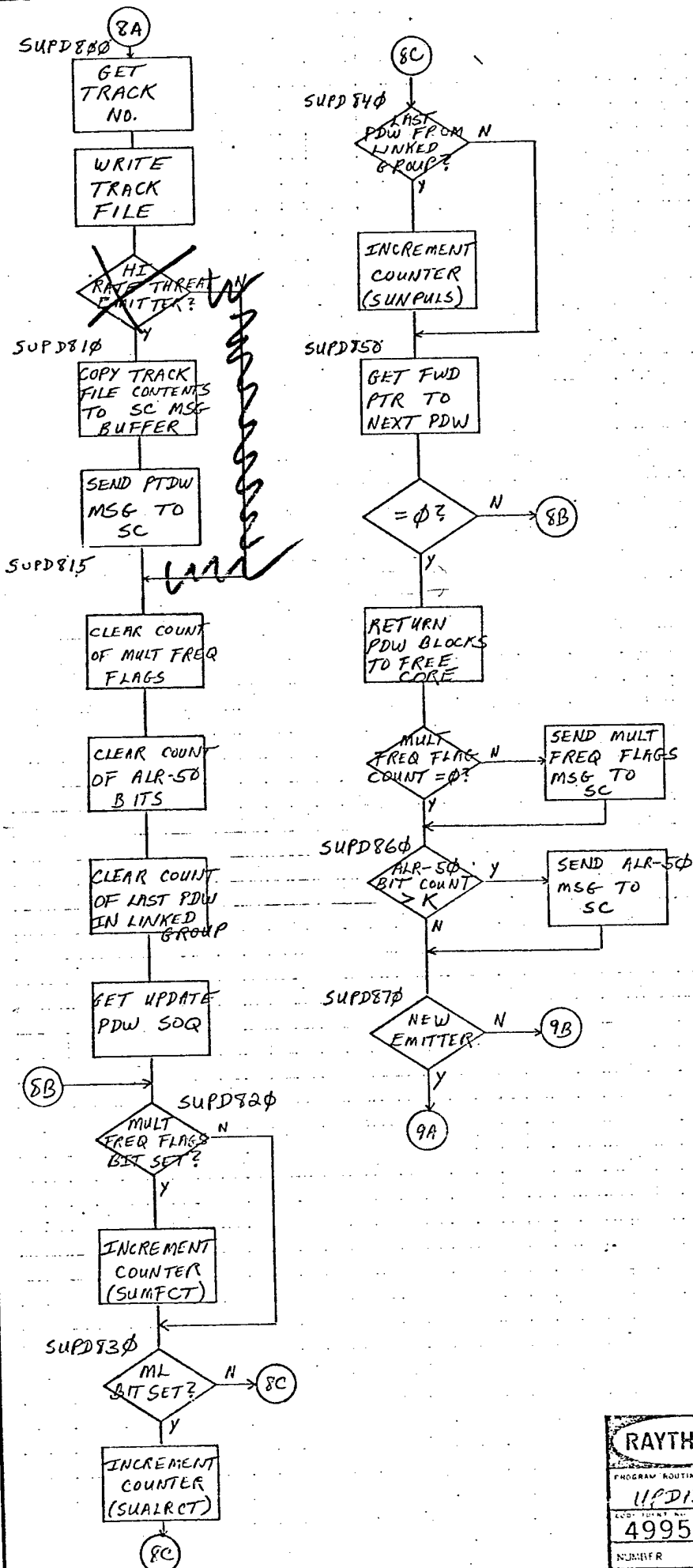


RAYTHEON		RAYTHEON COMPANY LEXINGTON, MASS. 02173	
PROGRAM ROUTINE SURNAME-ACRONYM JEWS SORTER SUPV			
UPDATE TASK			
CODE IDENT NO 49956	PREPARED BY T. CHERNESKY	DATE 3 JUN 76	
NUMBER 18	SHEET 7 OF 10		

FLOW CHART

REMARKS

WRITE TRACK
FILE AND
OUTPUT MESSAGES
TO SC



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LEXINGTON, MASS. 02173

PROGRAM ROUTINE'S ROUTINE ACRONYM JEWIS SORTER SUPV

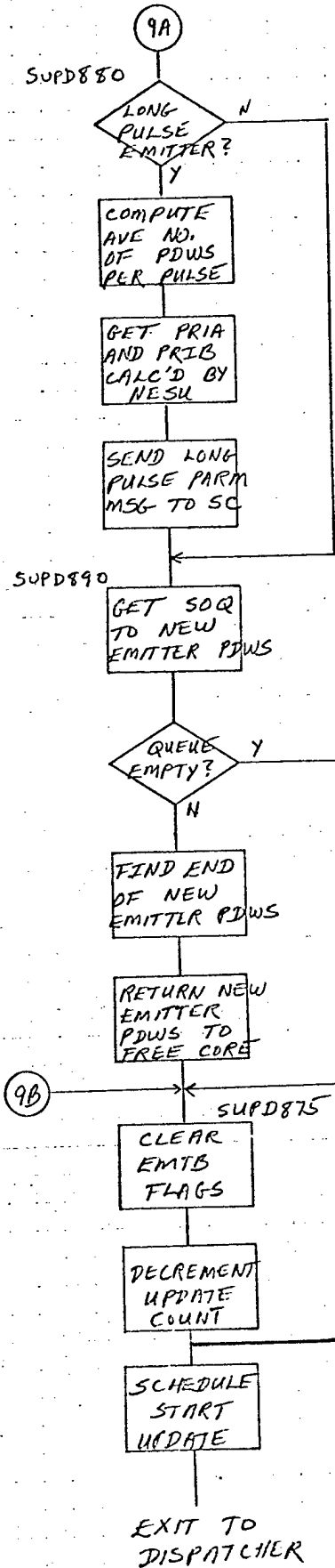
UPDATE TASK

COPIED BY 49956 PREPARED BY T. CHLAKESKY DATE 3 JUN 76

NUMBER 19 SHEET 8 OF 10

FLOW CHART

REMARKS



WRITE TRACK
FILE AND
OUTPUT MESSAGES
TO SC

FLAGS CLEARED :

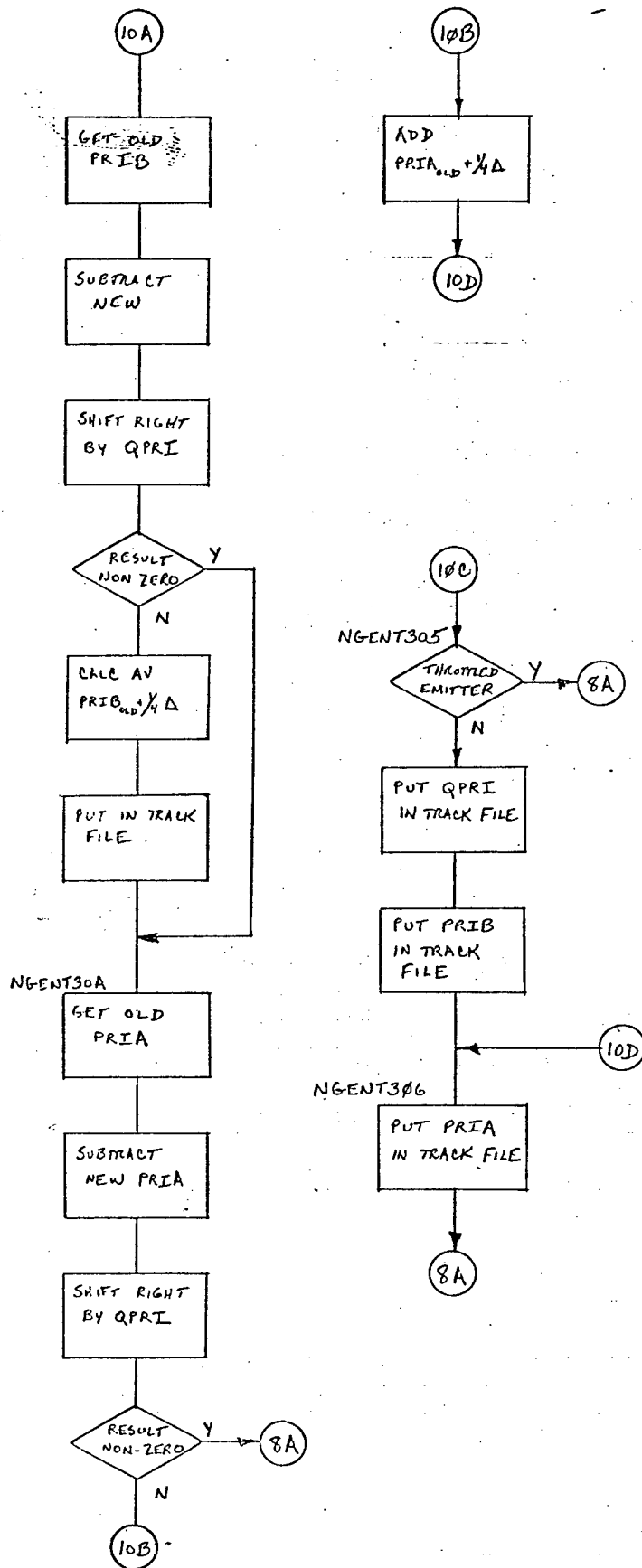
1. IN UPDATE
2. WAITING FOR PDWS
3. TIME OUT
4. NEW EMITTER

CLEAR UPDATE
EOQ AND
NEW EMITTER
PDW POINTER

RAYTHEON		RAYTHEON COMPANY LEXINGTON, MASS. 02173	
PROGRAM ROUTINE SUBROUTINE ALGORITHM		JEWIS SORTER SUPV	
UPDATE TASK			
LOGS IDENT NO.	PREPARED BY	DATE	
49956	T. CHERNESKY	3 JUN 76	
NUMBER	20	SHEET 9 OF 10	

FLOW CHART

REMARKS



RAYTHEON		RAYTHEON COMPANY LEXINGTON, MASS. 02173	
PROGRAM/ROUTINE SUBROUTINE ACRONYM		IEW'S SORTER SUPV	
UPDATE TASK			
EGSA IDENT NO	PREPARED BY	DATE	
49956			
NUMBER	21	SHEET 10 OF 10	

SRTCRIPT

SAVE
REGISTERS

IS
SUPV IDLE
FLAG SET?

N

INCREMENT
SYSTEM
TIME

NEG?

Y

SET
SYSTEM
TIME = 0

N

SRTC10

SET NESH
PURGE
FLAG

GET BLOCK
FROM FREE
CORE

7LO

6LO

SCHED
TIME-OUT
CK TASK

7LO

6LO

INCREMENT
RTC INTERRUPT
COUNT

= 0?

N

SRTC94

ENABLE IB
23/4 FULL
INTERRUPT
VIA TC

SRTC95

RESTORE
REGISTERS

ENABLE
INTERRUPTS

INTERRUPT
RETURN

SCHED
INITIATE
UPDATE

SET RTC
INTERRUPT
COUNT = -4

interrupt
RTC occurs
every 50 msec

RAYTHEON		RAYTHEON COMPANY LEXINGTON, MASS. 02173	
PROGRAM ROUTINE SURROUTINE ACCTNIM ILWS SORTER SUPV RTC INTERRUPT HANDLER			
COPIES NO 49956	PREPARED BY T. CHERNISKY	DATE 21 MAY 76	
NUMBER	22	SHEET	1 OF 1

SHUNGRUP

SAVE REGS
IN 1K
RAMSEND BUS
HUNG ERROR
MSG TO SC

HALT

SWDRUPT -

SAVE REGS
IN 1K
RAMCOMPUTE
CHECKSUM
OF SUPV
PROGRAM= INITIALIZER
VALUE?SEND ERROR
ALERT MSG
TO SCRESET
WATCHDOG
TIMERRESTORE
REGISTERSENABLE
LO
INTERRUPTSINTERRUPT
RETURNSEND WD
TIMER EXP
MSG TO SC

HALT

SPANRUPT

SAVE REGS
IN 1K
RAM

HALT

REGS. SAVED
ARE A,E,B,X,S,P

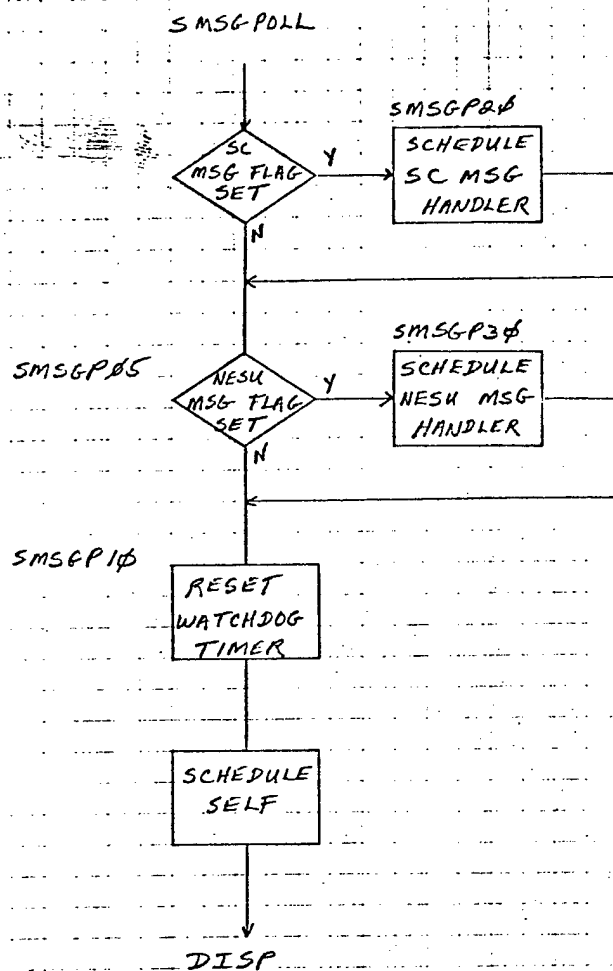
RAYTHEON

RAYTHEON COMPANY
LEXINGTON, MASS. 02173PROGRAM/ROUTINE/SUBROUTINE ACRONYM IEWS SONJER SUPV
BUS HUNG / WATCHDOG TIMER / CANIC RUTINCODE IDENT. NO.
49956PREPARED BY
T. CHERNISKYDATE
27 MAY 76

NUMBER

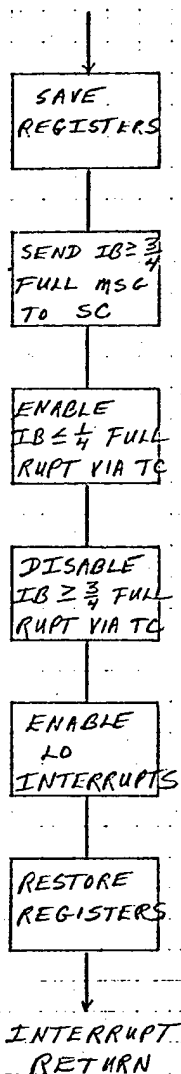
22

SHEET 1 OF 1

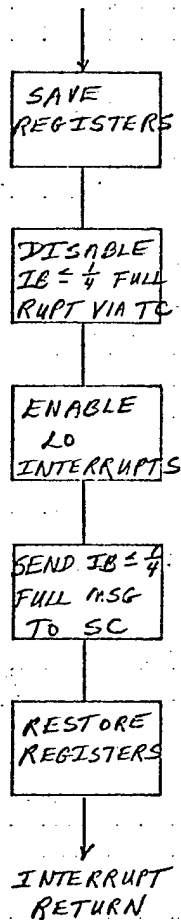


RAYTHEON		RAYTHEON COMPANY LEXINGTON, MASS. 02173	
PROGRAM ROUTINE SUBROUTINE ACRONYM IEWS SORTER SUPV			
MESSAGE POLLING TASK			
CODE IDENT NO 49956	PREPARED BY T. CHERNESKY	DATE 12 APR 76	
NUMBER 04	SHEET 1 OF 1		

IB34RUPT



IB14RUPT



IB $\geq \frac{3}{4}$ FULL
INTERRUPT IS
ENABLED VIA
TC EVERY RTC
INTERRUPT

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LEXINGTON, MASS. 02173

PROGRAM/ROUTINE SUBROUTINE ACRONYM IEWS SORTER SUPV

IB INTERRUPT HANDLERS

CODE IDENT NO

49956

PREPARED BY

T. CHERNESKY

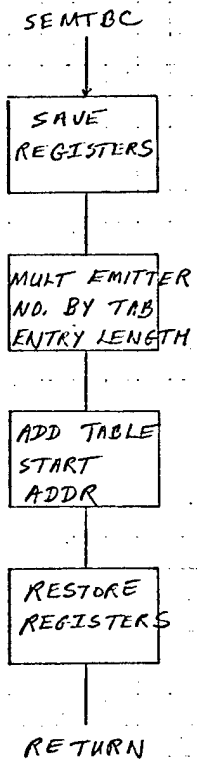
DATE

30 APR 76

NUMBER

25

SHEET 1 OF 1



CALL SEQ -

LDSA (EMITTER NO.)

JSUB (= SENTBC)

STSA (EMTB ENTRY ADDR.)

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RAYTHEON COMPANY
LEXINGTON, MASS. 02173

PROGRAM ROUTINE / SUBROUTINE ACRONYM IEWS SCATER SUPV

CALC. Emitter TABLE ENTRY ADDR SUBR.

LIFE / IDENT NO. 49956

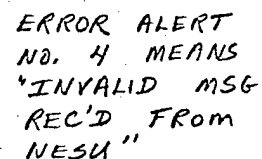
PREPARED BY T. CHERNESKY

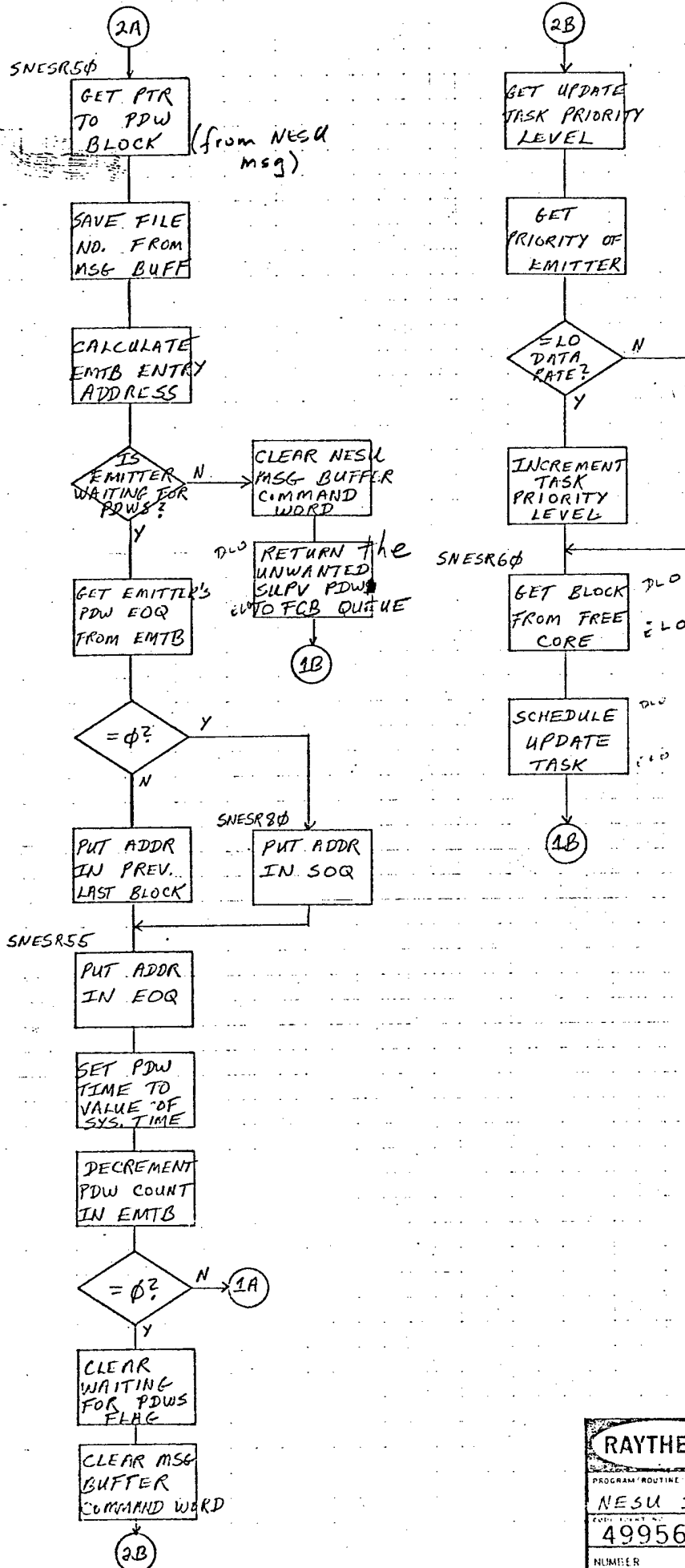
DATE 30 APR 76

NUMBER

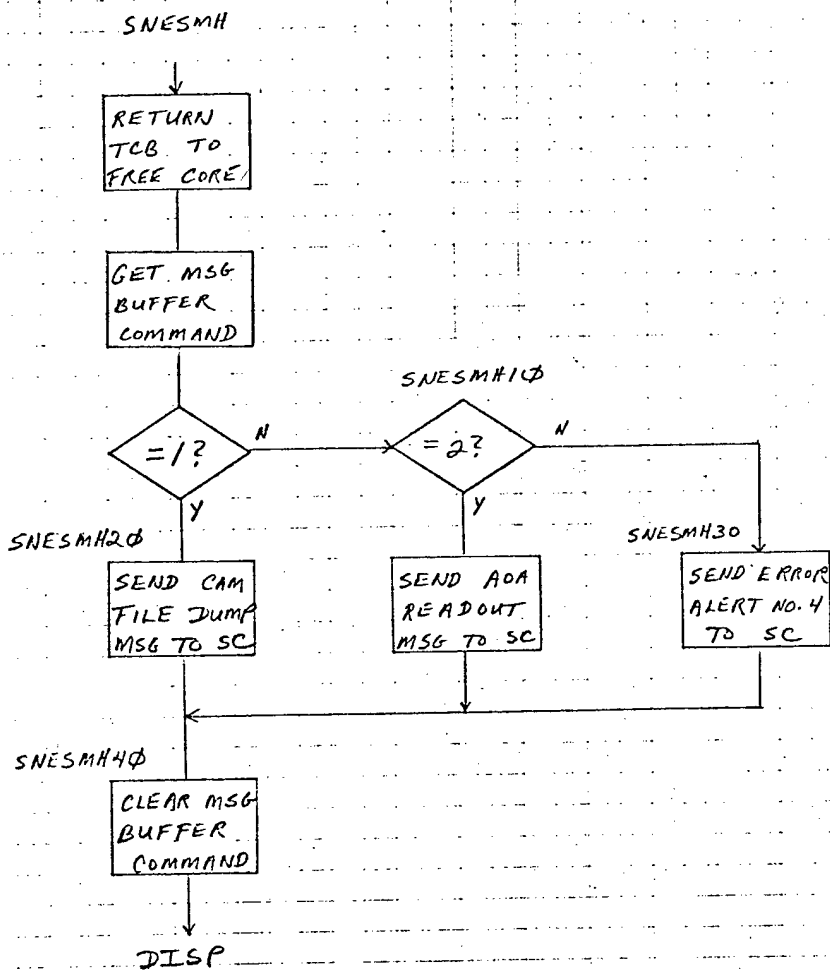
26

SHEET 1 OF 1





RAYTHEON		RAYTHEON COMPANY LEXINGTON, MASS. 02173	
PROGRAM/ROUTINE/SUBROUTINE ACRONYM IEWS SORTER SUPV			
NESU INTERRUPT HANDLER			
FORM NO. 49956	DATE 2 JUN 74	RELEASED BY T. CHERNESKY	
NUMBER 08	SHEET 2 OF 2		



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RAYTHEON COMPANY
LEXINGTON, MASS. 02173

PROGRAM ROUTINE SUBROUTINE ACRONYM JEWEL SORTER SHPV

JESU MESSAGE HANDLER

49956

PREPARED BY

T. CHERNESKY

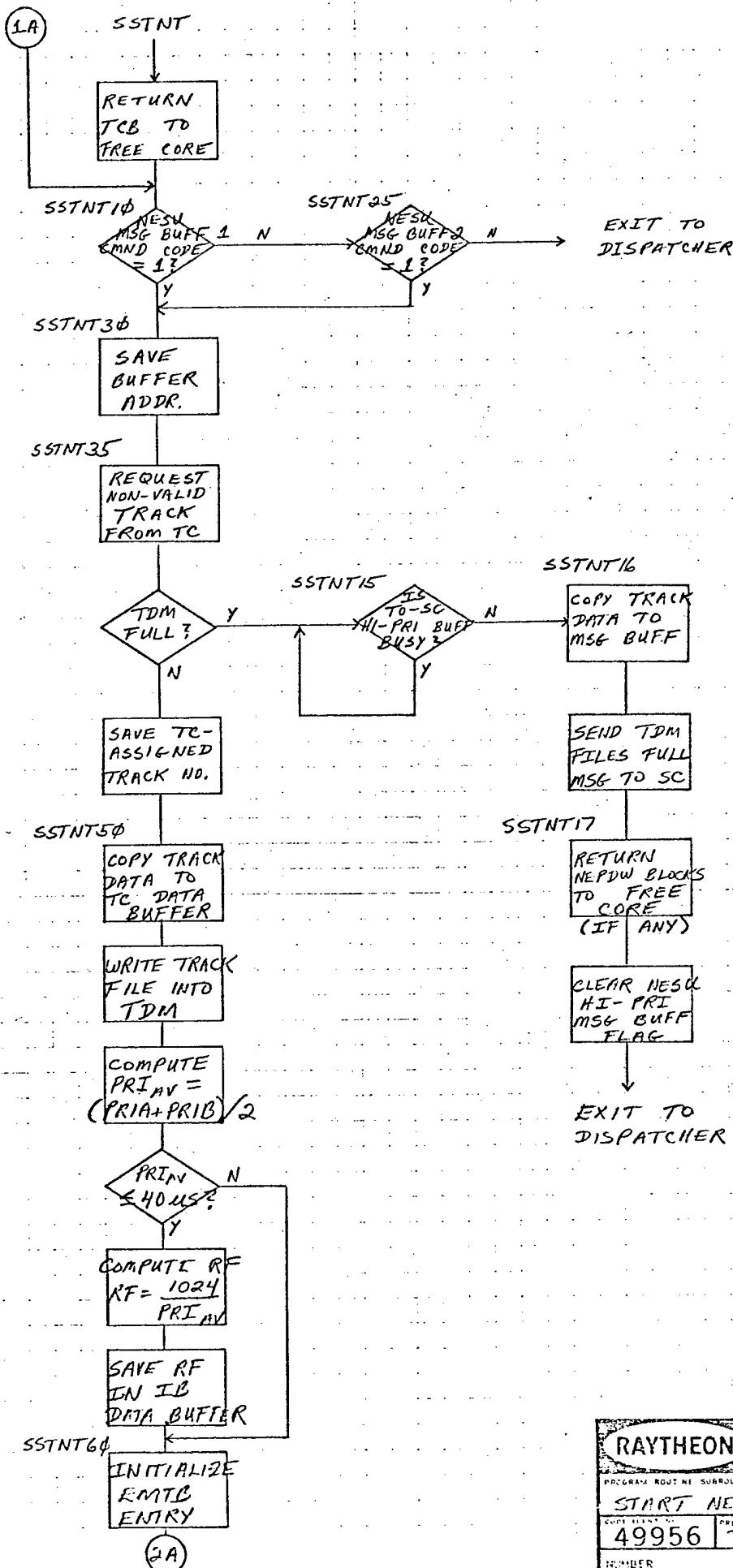
DATE

12 APR 76

NUMBER

29

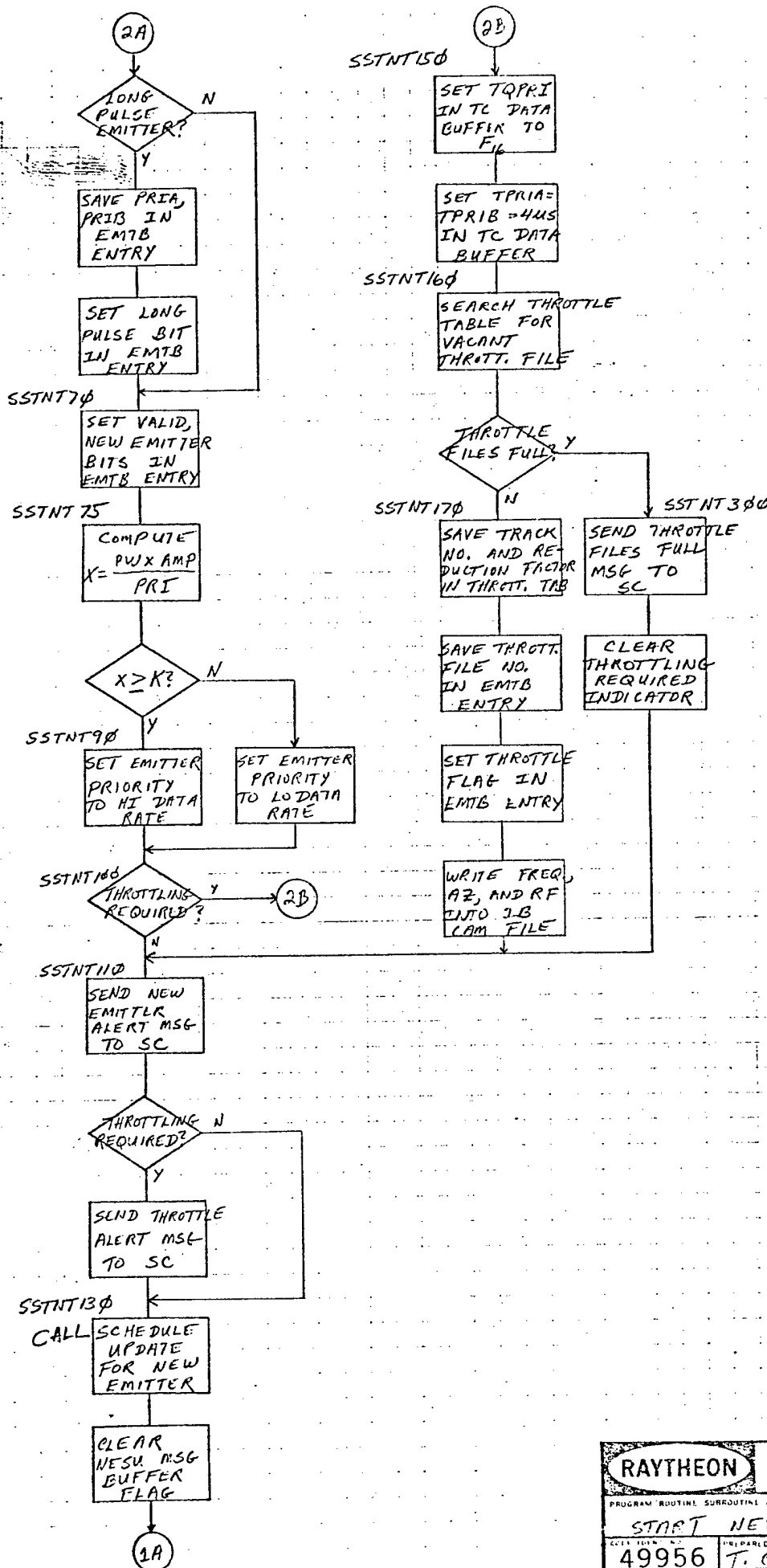
SHEET 1 OF 1



$PRI_{AV} \leq 40MS$
MEANS THROTLING
OF NEW EMITTER
IS REQUIRED.

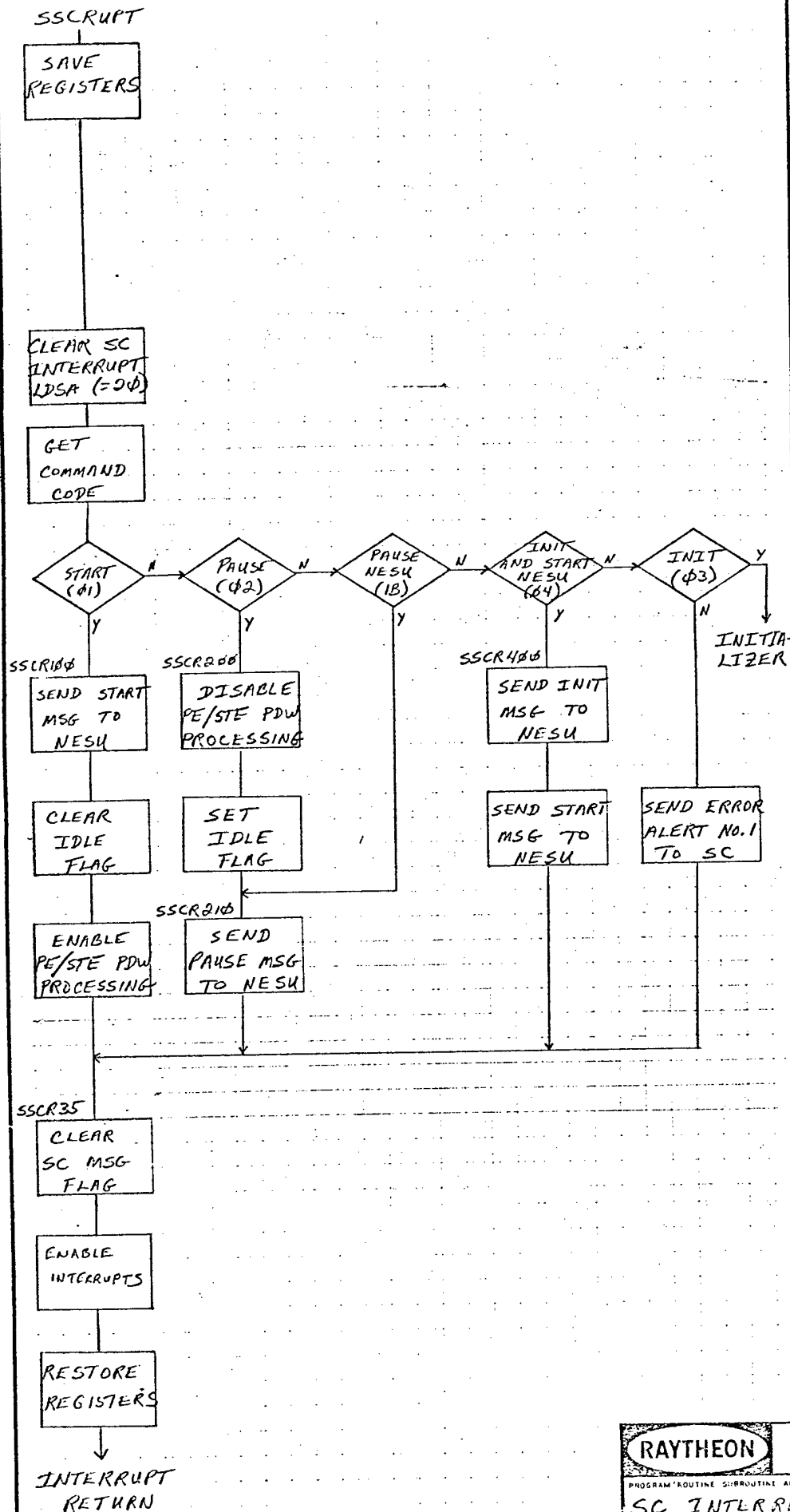
'RF' MEANS
'REDUCTION
FACTOR'

RAYTHEON		RAYTHEON COMPANY LEXINGTON, MASS. 02173	
PROGRAM ROUTINE SUBROUTINE ACRONYM IEWS SORTER SUPV			
START NEW TRACK TASK			
COPY IDENT NO. 49956	PREPARED BY T. CHERNESKY	DATE 8 JUN 76	
NUMBER 50	SHEET 1 OF 2		



K = TARGET TRACK THRESHOLD

RAYTHEON		RAYTHEON COMPANY LEXINGTON, MASS. 02173	
PROGRAM / ROUTINE / SUBROUTINE / ACRONYM		JLWS SORTER SUPV	
START NEW TRACK TASK			
49956	PREPARED BY T. CHERNISKY	DATE 3 MAY 76	
NUMBER	101	SHEET 2 OF 2	



RAYTHEON		RAYTHEON COMPANY LEXINGTON, MASS. 02173	
PROGRAM/ROUTINE SUBROUTINE ACRONYM		JWS SORTER SUPV	
SC INTERRUPT HANDLER			
LOGS/ISSUE NO.	49956	DATE	2 JUN 76
NUMBER	30	SHEET	1 OF 1

SSCMH

RETURN
TOB TO
FREE COREGET MSG
COMMAND
CODELEGAL
CODE?

N

SSCMH10

SEND ERROR
ALERT NO.5
TO SC

1A

SSCMH20

CLEAR SC
MSG BUFFER
FLAG

DISP

COMPUTE
TABLE
INDEXGET R. BYTE
OF MSG
COMMANDJUMP TO A LO-PRI
MSG PROCESSING ROUTINERIGHT BYTE
USUALLY CONTAINS
SORTER TRACK
FILE NO.CAM FILE DUMP
OP-CODE = 05

SSCM05

SEND CAM
FILE DUMP
MSG TO NESU

1A

AOA READOUT REQUEST
OP-CODE = 06

SSCM06

SEND AOA
READOUT
REQUEST MSG
TO NESU

1A

RAYTHEON

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LEXINGTON, MASS. 02173

PROGRAM/ROUTINE SUBROUTINE ACRONYM JAWS SORTER SUPV

SC MESSAGE HANDLING

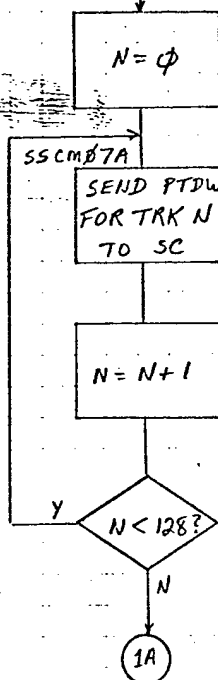
COST ESTIMATE NO
49956PREPARED BY
T. CHERNESKYDATE
12 APR 76

NUMBER

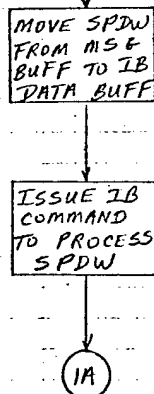
33

SHEET 1 OF 5

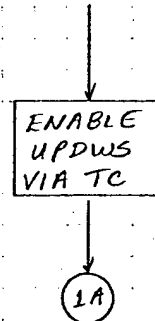
FILE DUMP REQUEST
OP- CODE = 07
SSCM07



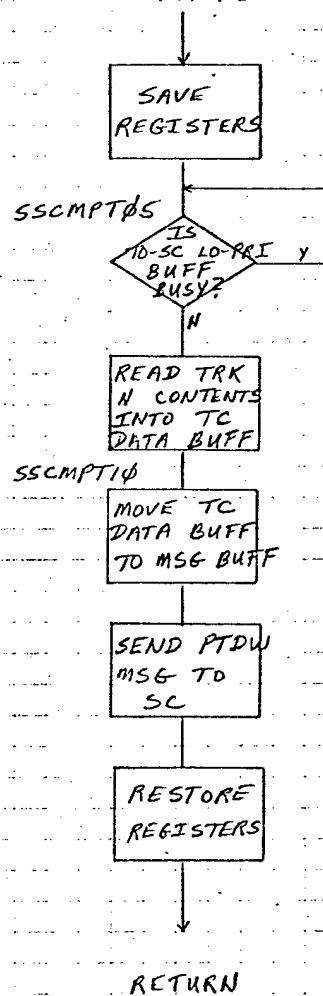
SYNTHETIC PDW
OP- CODE = 09
SSCM09



UPDW REQUEST
OP- CODE = 08
SSCM08



SUBROUTINE TO SEND 1
PTDW TO SC.
SSCMPTDW



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PROGRAM ROUTINE SUBROUTINE ACRONYM ILWS SORTER SURV

SC MESSAGE HANDLING

49956

PREPARED BY

T. CHERNESKY

DATE

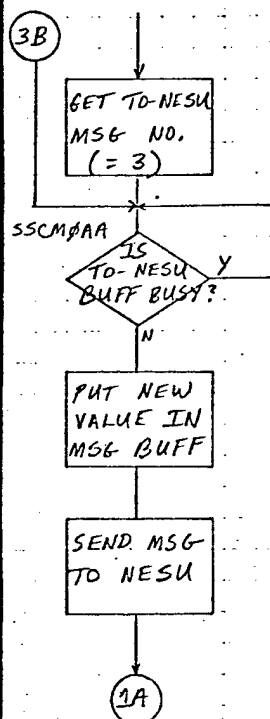
12 APR 76

NUMBER

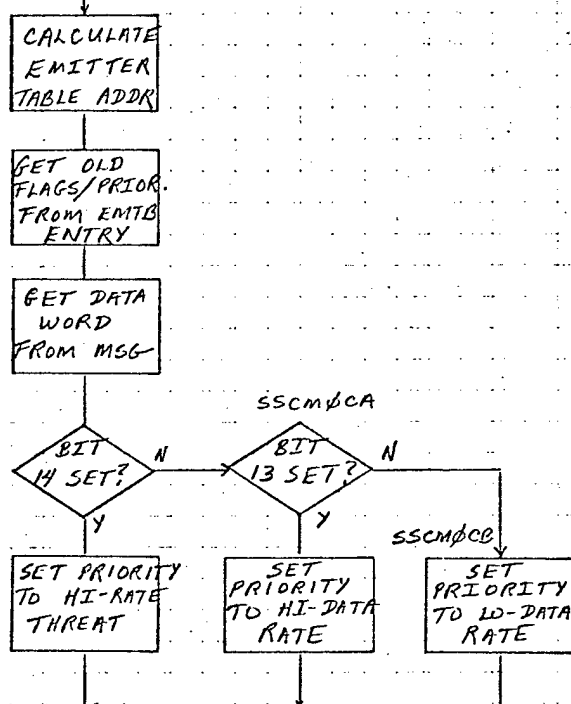
34

SHEET 2 OF 8

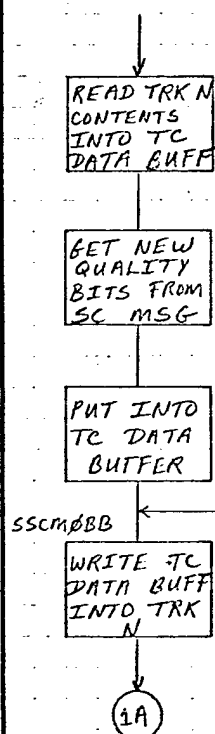
NESU TRACK
THRESHOLD MODIFY
OP-CODE = ϕA
SSCM ϕA



TRACK PRIORITY MOD.
OP-CODE = ϕC
SSCM ϕC



QUALITY BIT MOD.
OF TRACK N
OP-CODE = ϕB
SSCM ϕB



(3A)

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PROGRAM/ROUTINE SYMBOLOGY SC MESSAGE HANDLING			
CODE IDENT. NO. 49956	PREPARED BY T. CHERNESKY	DATE 12 APR 76	
NUMBER 35		SHEET 3 OF 5	

PTDW REQUEST
OP-CODE = ϕD
SSCM ϕD

SEND PTDW
FOR TRACK
N TO SC

1A

SPDW REQUEST
OP-CODE = ϕE
SSCM ϕE

READ TRKN
CONTENTS
INTO TC
DATA BUFF

GET TTAMP,
TCODE FROM
SC MSG

TRANSFORM
INTO TDM
FILE
FORMAT

PUT INTO
TC DATA
BUFFER

SET
THRSC IN
TC DATA
BUFFER

3A

SPDW STOP
OP-CODE = ϕF
SSCM ϕF

READ TRKN
CONTENTS
INTO TC
DATA BUFF

CLEAR
THRSC IN
TC DATA
BUFFER

3A

NEPDW REQUEST
OP-CODE = 1ϕ
SSCM 1ϕ

CALCULATE
EMTB ENTRY
ADDRESS

GET
NEPDWS
SOQ

= ϕ ?

SSCM $1\phi D$

SEND ERR
ALERT NO.
2 TO SC

1A

GET A
NEPDW

SSCM $1\phi A$

IS
TO-SC 10- PRI Y
BUFF BUSY?

PUT PDW
IN MSG-
BUFFER

GET PDW'S
FWD PTR

= ϕ ?

SSCM $1\phi B$

SET LAST
NEPDW
MSG FLAG

SEND
NEPDW MSG
TO SC

RETURN THE
NEPDW
BLOCKS TO
FREE CORE

CLEAR SOQ
FOR NEPDWS
IN EMTB
ENTRY

1A

'NEPDW' MEANS
'NEW EMITTER
PDW'

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PROGRAM/ROUTINE SURROUTINE ACRONYM IEWS SORTER SUMV

SC MESSAGE HANDLING

CODE IDENT NO
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PREPARED BY
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DATE

12 APR 76

NUMBER

36

SHEET 11 OF 4

DELETE TRACK FILE

OP- CODE = 11

SSCM11

CLEAR VALID
BIT IN
TC DATA BUFFWRITE TC
DATA BUFF
INTO TRK
FILE NCALCULATE
EMTB ENTRY
ADDRGET EMTB
ENTRY FLAG
WORDTHROTTLED N
FILE?
YGET
THROTTLE
FILE NO.CLEAR
VALID BIT
IN IB CAM
FILEINIT
THROTTLE
TABLE
ENTRY

SSCM11A

~~SET NEW~~ CLEAR ALL
VALID FLAG FLAGS
IN EMTB
ENTRYRETURN
UPDATE PDW
BLOCKS (if any)RETURN N.E.
PDW BLOCKS
(if any)

1A

FREQUENCY MODIFICATION

OP- CODE = 12

SSCM12

GET
NEW
FREQUENCYREAD TRKN
INTO TC
DATA BUFFSTORE NEW
FREQ. IN
TC DATA BUFFWRITE TC
DATA BUFF
INTO TRK
FILE NCALCULATE
EMTB ENTRY
ADDRGET EMTB
ENTRY
FLAGSTHROTTLED N
FILE?
Y 1AGET THROTTLE
FILE NO.
FROM EMTBWRITE TREQ.
INTO IB
CAM FILE

1A

CLEAR UPDATE
EQO AND NEW
EMITTER PDW
POINTER

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LEXINGTON, MASS. 02173PROGRAM ROUTINE/SUBROUTINE ACRONYM IEWS SORTER SUPV
SC MESSAGE HANDLING

49956

PREPARED BY
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12 APR 76

NUMBER

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SHEET 5 OF 9

PRI MODIFICATION
OF TRACK N
OP CODE = 13
SSCM13

READ TRK N
CONTENTS
INTO TC
DATA BUFF

GET NEW
PRIA FROM
SC MSG

PUT INTO
TC DATA
BUFFER

GET
NEW
PRIB

PUT INTO
TC DATA
BUFFER

3A

AOA THRESHOLD
MODIFY.
OP CODE = 15
SSCM15

GET TO-NESU
MSG NO.
(= 4)

3B

THROTTLE FILE MODIFY.
OP CODE = 14
SSCM14

CALCULATE
EMTB ENTRY
ADDR

GET EMTB
ENTRY
FLAGS

SET
THROTTLE
FLAG BIT

GET THROTTLE
FILE NO.
FROM SC MSG

SAVE IN
EMTB
ENTRY

COMPUTE
THROTTB
ENTRY ADDR

SAVE EMITTER
NO. IN
THROTTB

GET REDUCT.
FACTOR FROM
SC MSG

SAVE IN
THROTTB
ENTRY

WRITE
REDUCTION
FACTOR INTO
IB CAM

6A

6A

GET NEW
FREQ. FROM
SC MSG

WRITE
FREQ. INTO
IB CAM

GET NEW
AZIMUTH
FROM SC
MSG

WRITE
AZIMUTH
AND VALID
INTO IB CAM

1A

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PROGRAM ROUTINE SUBROUTINE ACRONYM LEWS SORTER SUBV

SC MESSAGE HANDLING

CODE IDENT NO.

49956

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T. CHERNESKY 12 APR 76

DATE

NUMBER

38

SHEET 6 OF 8

CREATE FILE.

OP-CODE = 16

SSCM16

CALCULATE
EMTB ENTRY
ADDRGET EMTB
ENTRY
FLAGSSET EMITTER
PRIORITY
TO LO DATA
RATEINITIALIZE
EMTB
ENTRY

SSCM16A

COPY TRK
DATA TO TC
DATA BUFFGET
TRACK
NO.WRITE TC
DATA BUFF
INTO TDMIS
TO-SC LO-PRI Y
BUFF BUSY?SEND CONFIRM
FILE CREATION
MSG TO SC

1A

UPDW STOP

OP-CODE = 17

SSCM17

DISABLE
UPDWS
VIA TC

1A

PW MODIFY OF TRACK N

OP-CODE = 18

SSCM18

READ TRKN
INTO TC
DATA BUFFGET NEW
PW FROM
SC MSGPUT INTO
TC DATA
BUFFER

3A

TRANSFER TABLE

OP-CODE = 19

SSCM19

GET ADDR
OF 8-WORD
BLOCK TO BE
SENT TO SCIS
TO-SC LO-PRI Y
BUFF BUSY?

SSCM19A

PUT 8 WORDS
OF SORTER MEM.
IN MSG
BUFFERPUT OP-CODE
IN MSG
BUFFERSET FLAG
AND WORD
COUNT

1A

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PROGRAM ROUTINE SURROUTINE ACRONYM JEW'S SORTER SUPV

SC MESSAGE HANDLING

CODE UNIT NO. 49956 PREPARED BY T. CHERNESKY DATE 3 JUN 76

NUMBER 39 SHEET 7 OF 8

MODIFY SORTER MEMORY

OP-CODE = 1A

SSCM1A

GET ADDR
OF WORD TO
BE MODIFIEDREPLACE
CONTENTS
OF WORD

1A

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PROGRAM ROUTINE SUBROUTINE ACRONYM IEWS SORTER SUPV

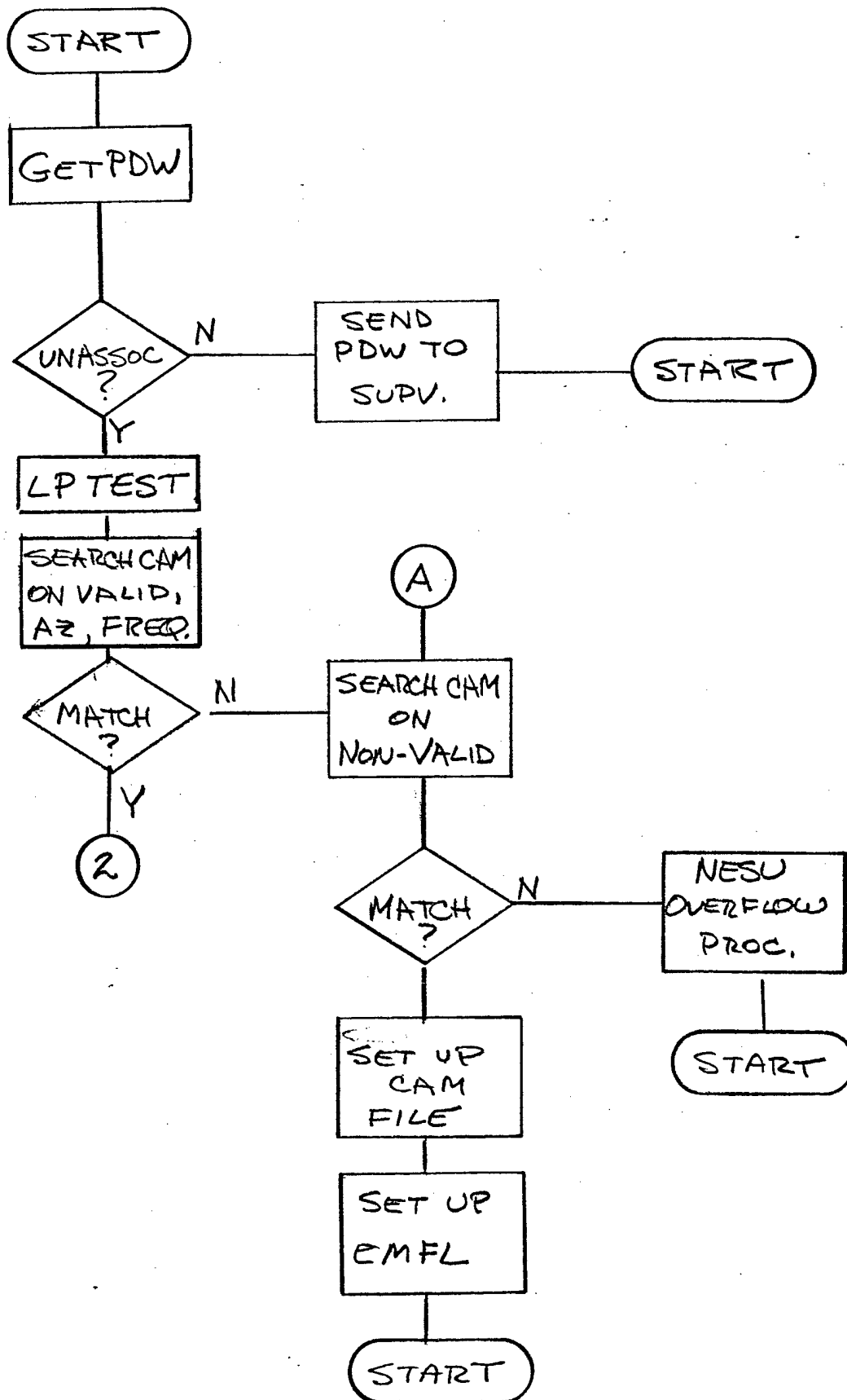
SC MESSAGE HANDLING

CODE IDENT NO.
49956PREPARED BY
T. CHERNESKYDATE
12 APR 76

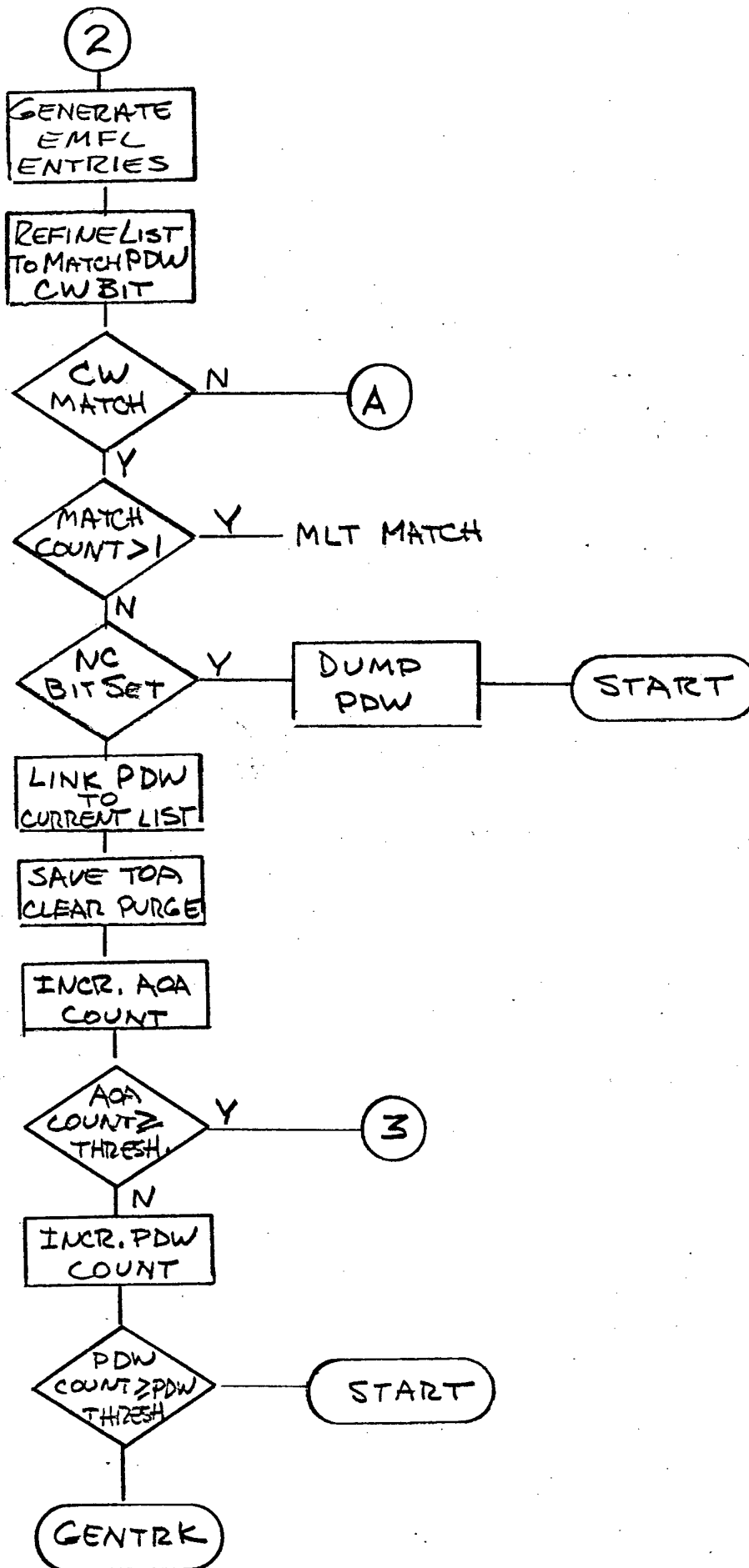
NUMBER

40

SHEET 5 OF 6

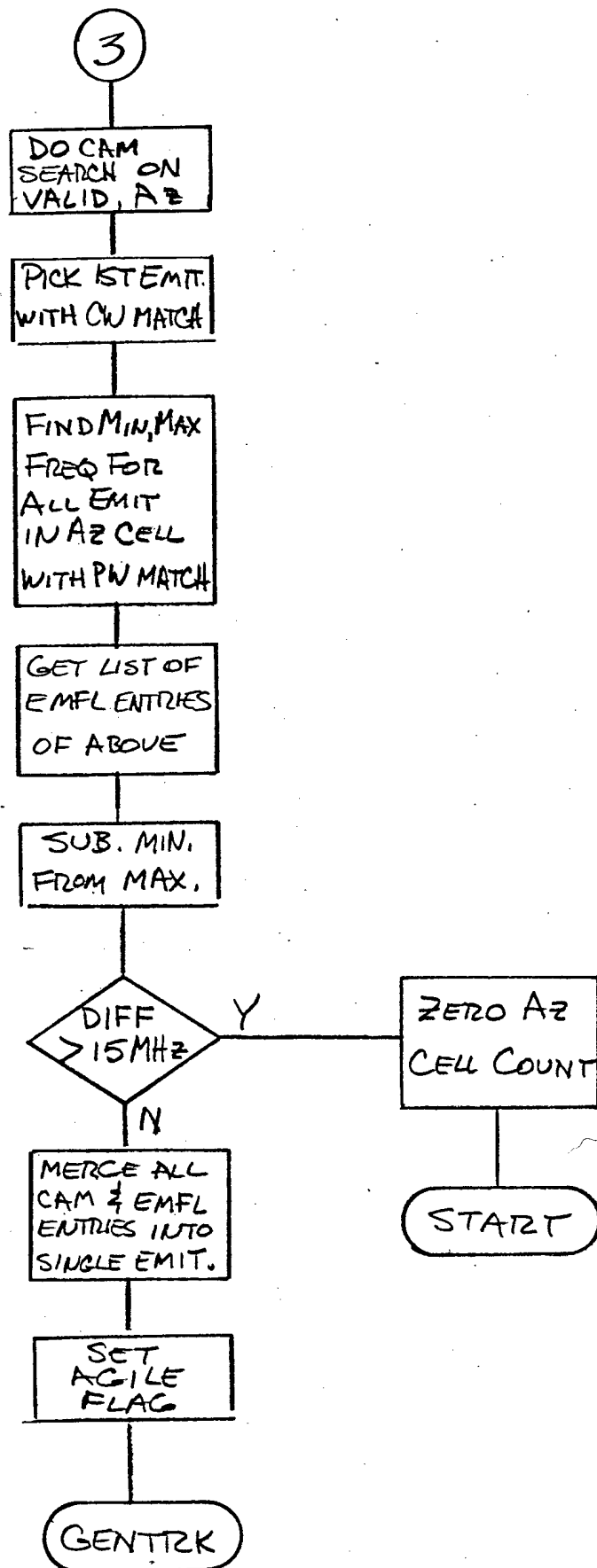


NESU
2

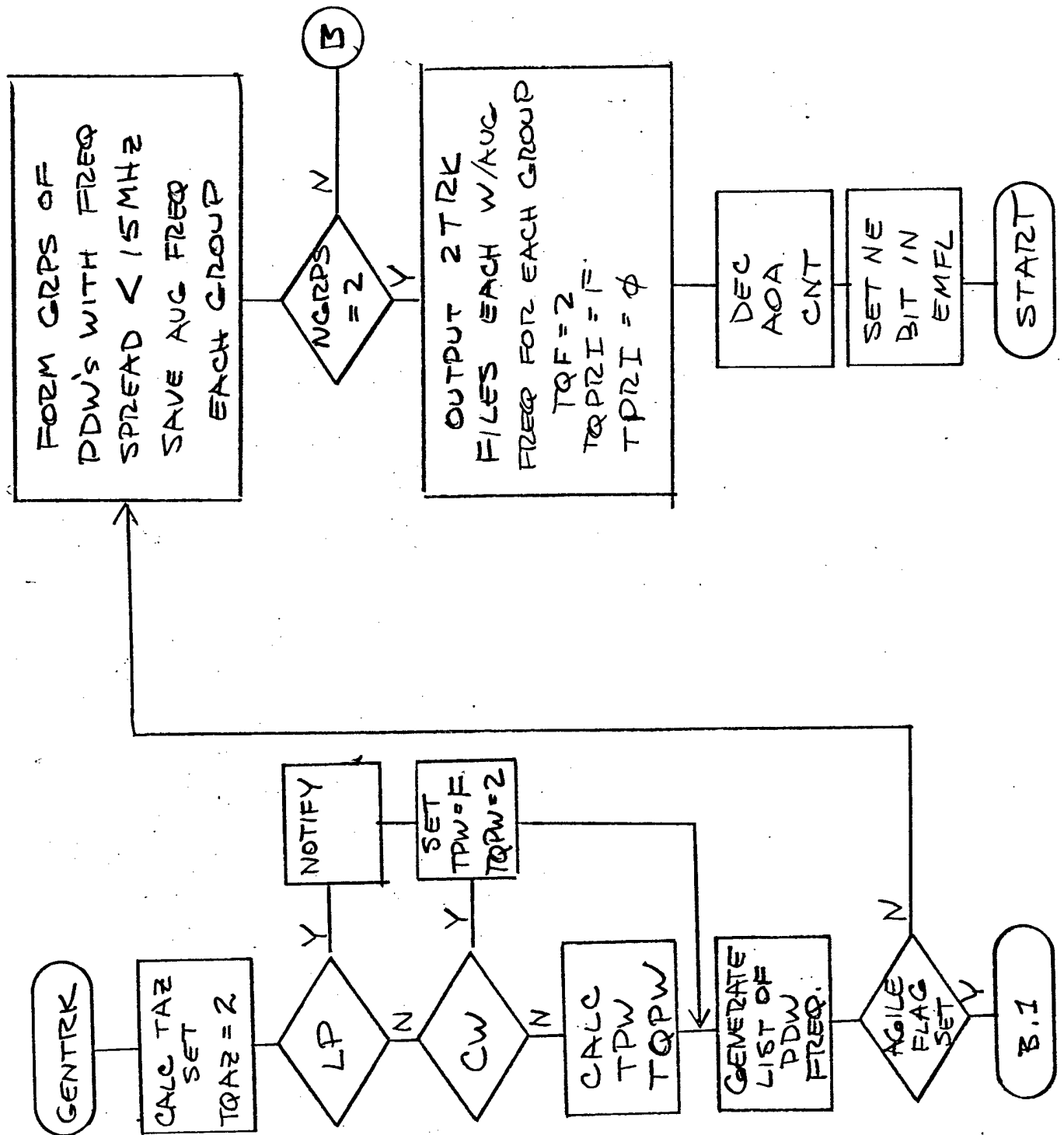


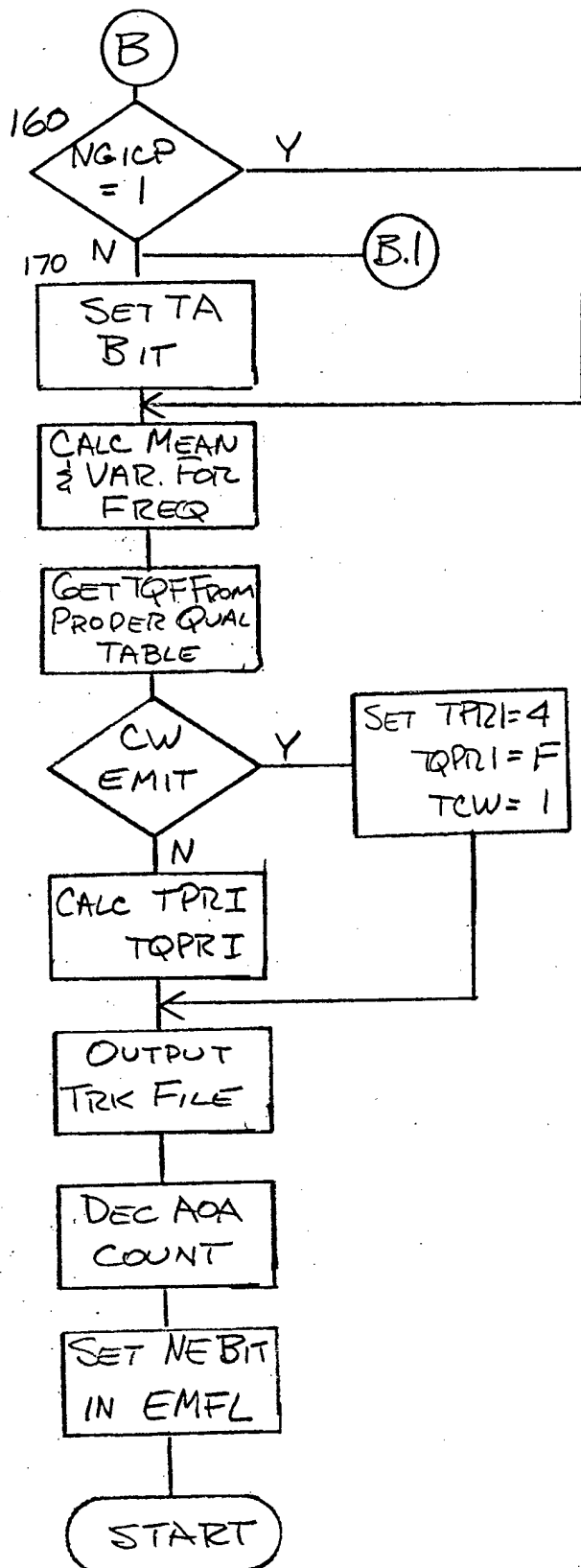
NESU

3



NESU GENTRK PROC 1

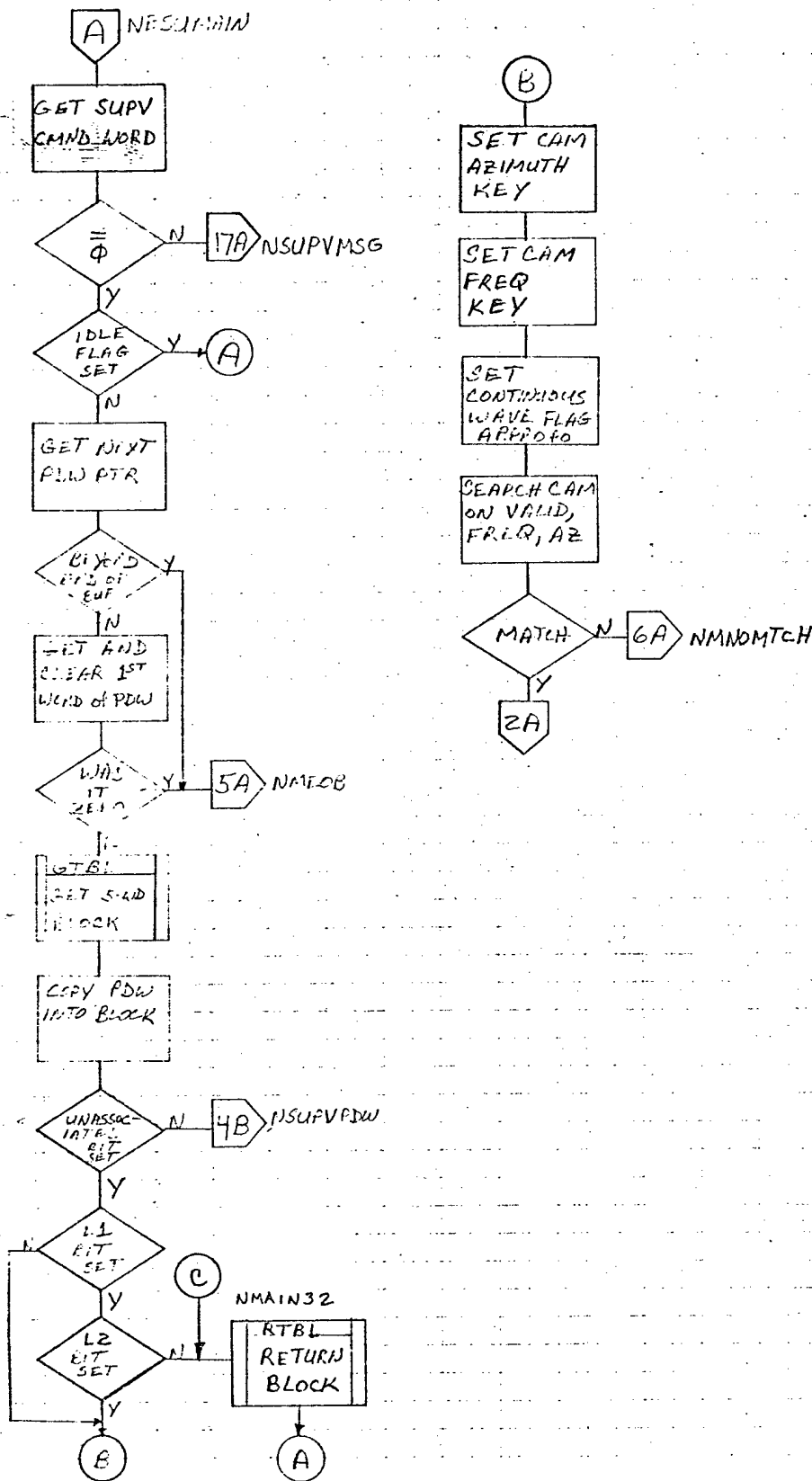




NESU
5
GENTRK
PROC 2

FLOW CHART

REMARKS



NESUMAIN IS THE ROOT OF THE NESU TREE

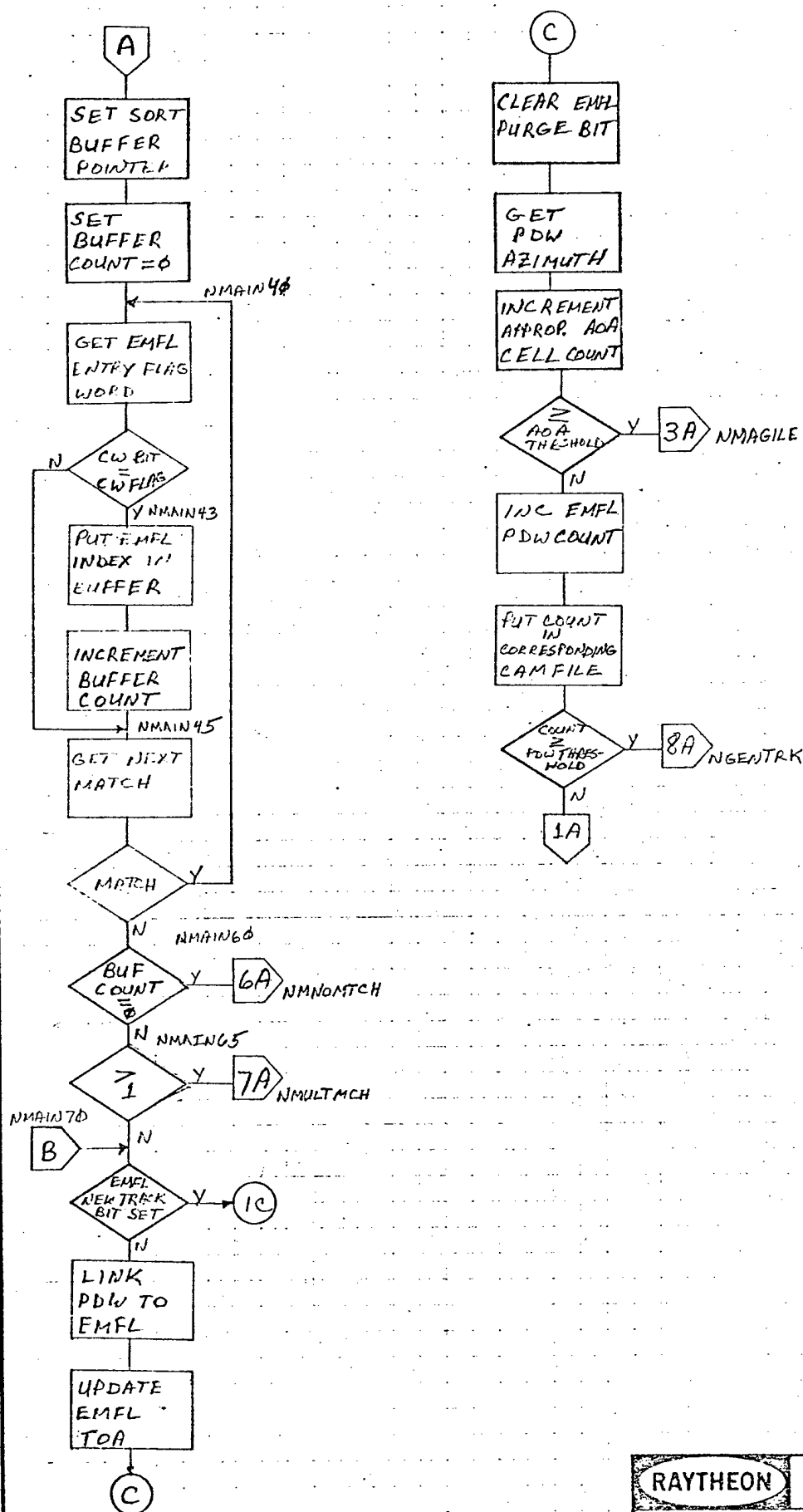
SUPERVISOR REQUESTS TAKE PRIORITY OVER PDW PROCESSING

MATCH RETURNS INDEX TO START OF CORRESPONDING EMFL TABLE ENTRY

ONLY THE LAST PDW DESCRIBING A LONG PULSE IS USED

NOTE: 7B DENOTES SHEET 7 LABEL B

RAYTHEON		RAYTHEON COMPANY LEXINGTON, MASS. 02173	
PROGRAM ROUTINE SUBROUTINE ACRONYM			
1EUS-SORTER - NESU (DETAIL)			
CU 1.10.1	PREPARED BY	DATE	
49956	G. G. LONARDO		
NUMBER	MAIN	SHEET	1 OF 19



FREQUENCY
AGILE EMITTER CHECK

A PDW MATCH MUST
INCLUDE AZIMUTH,
FREQUENCY AND
CONTINUOUS WAVE

TRTH - NUMBER
OF PDWS REQUIRED TO
GENERATE NEW TRACK

IGNORE PDW MATCHING
FILE RECENTLY SENT
TO SUPERVISOR

EMFL TOA AND PURGE
BIT ARE USED TO
PURGE NOISE AND "OLD"
ENTRIES

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PROGRAM / ROUTINE / SUBROUTINE / ACRONYM

JEWIS SORTER - NESU

49956

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DATE

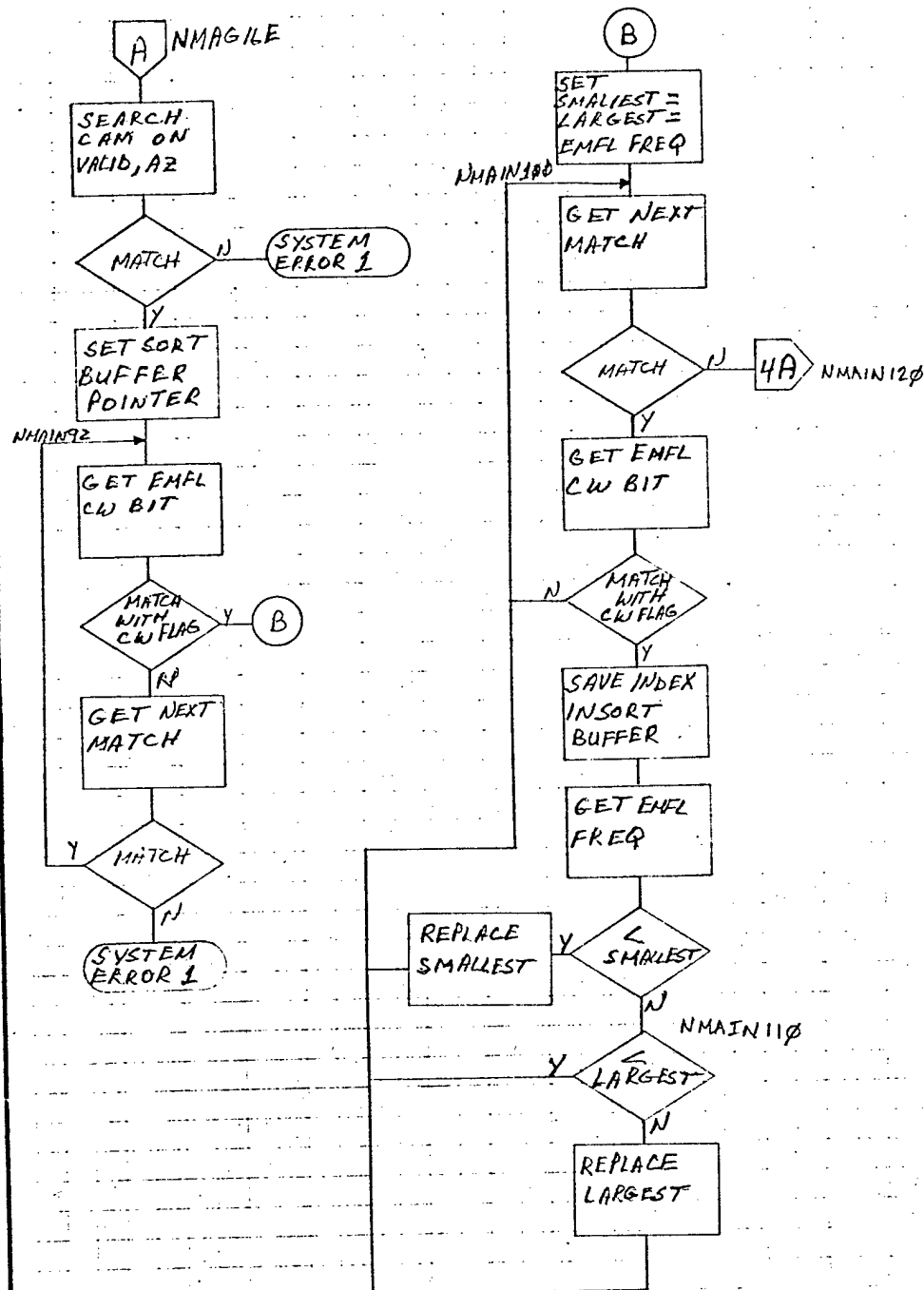
NUMBER

MAIN

SHEET 2 OF 19

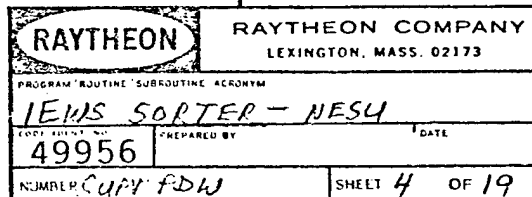
FLOW CHART

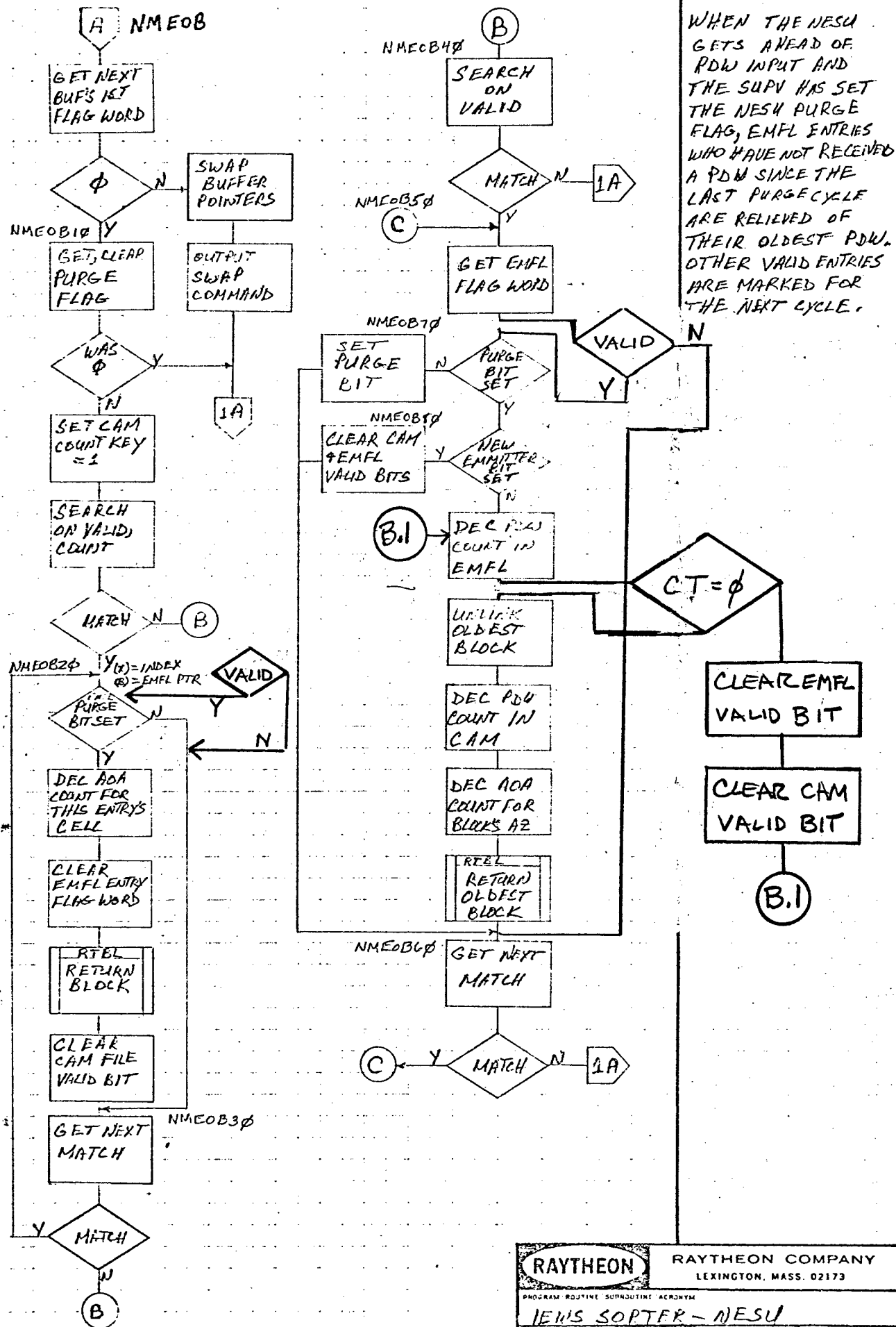
REMARKS



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PROGRAM/ROUTINE SUBROUTINE ACRONYM 1EUS SORTER-NESU			
LOGIC UNIT NO. 49956	PREPARED BY	DATE	
NUMBER 1EUS SORTER	SHEET 3 OF 19		

REMARKS





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PROGRAM ROUTINE SUBROUTINE ACRONYM

IEWS SORTER - NESU

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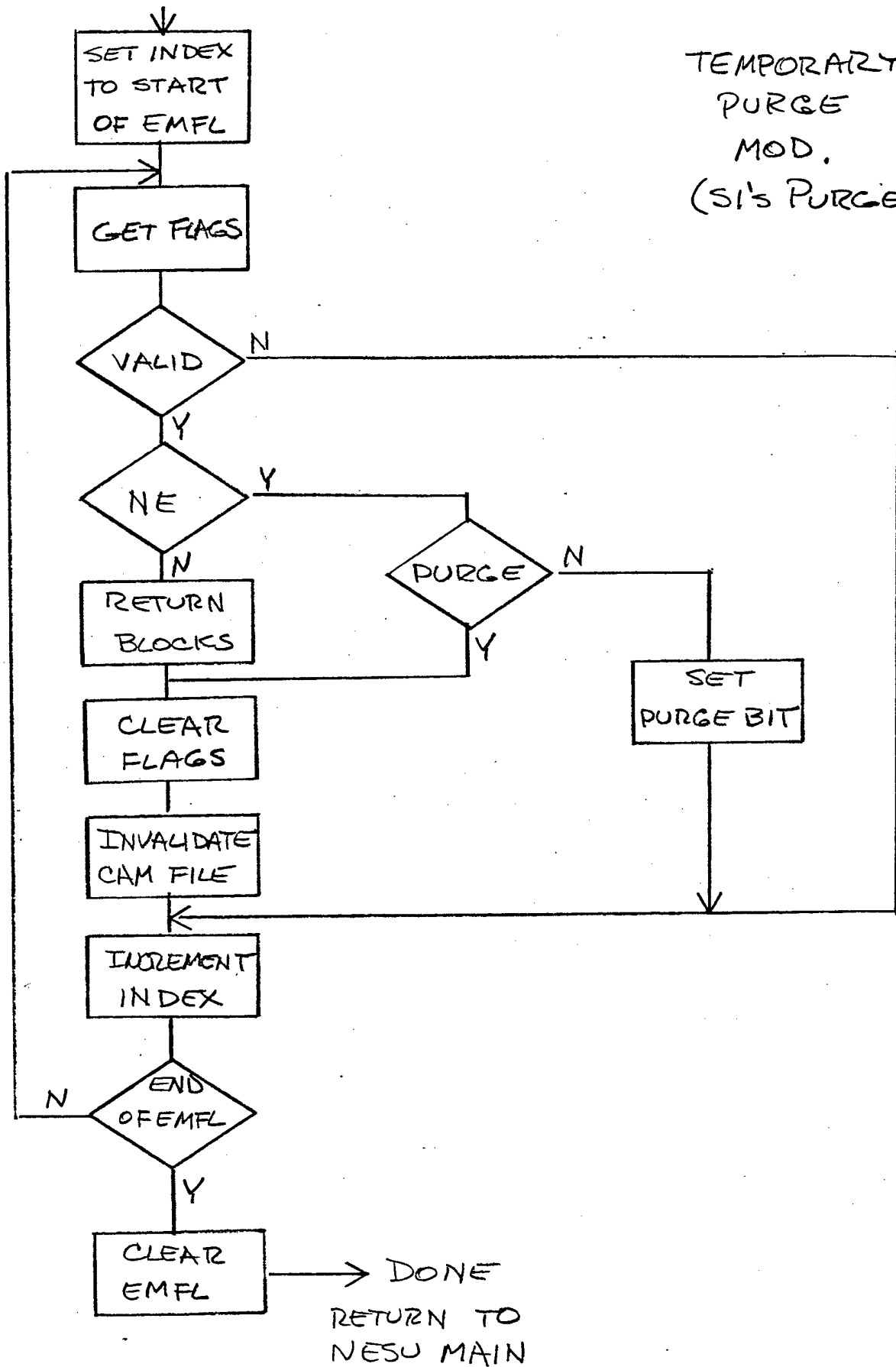
PREPARED BY

DATE

NUMBER NM10B

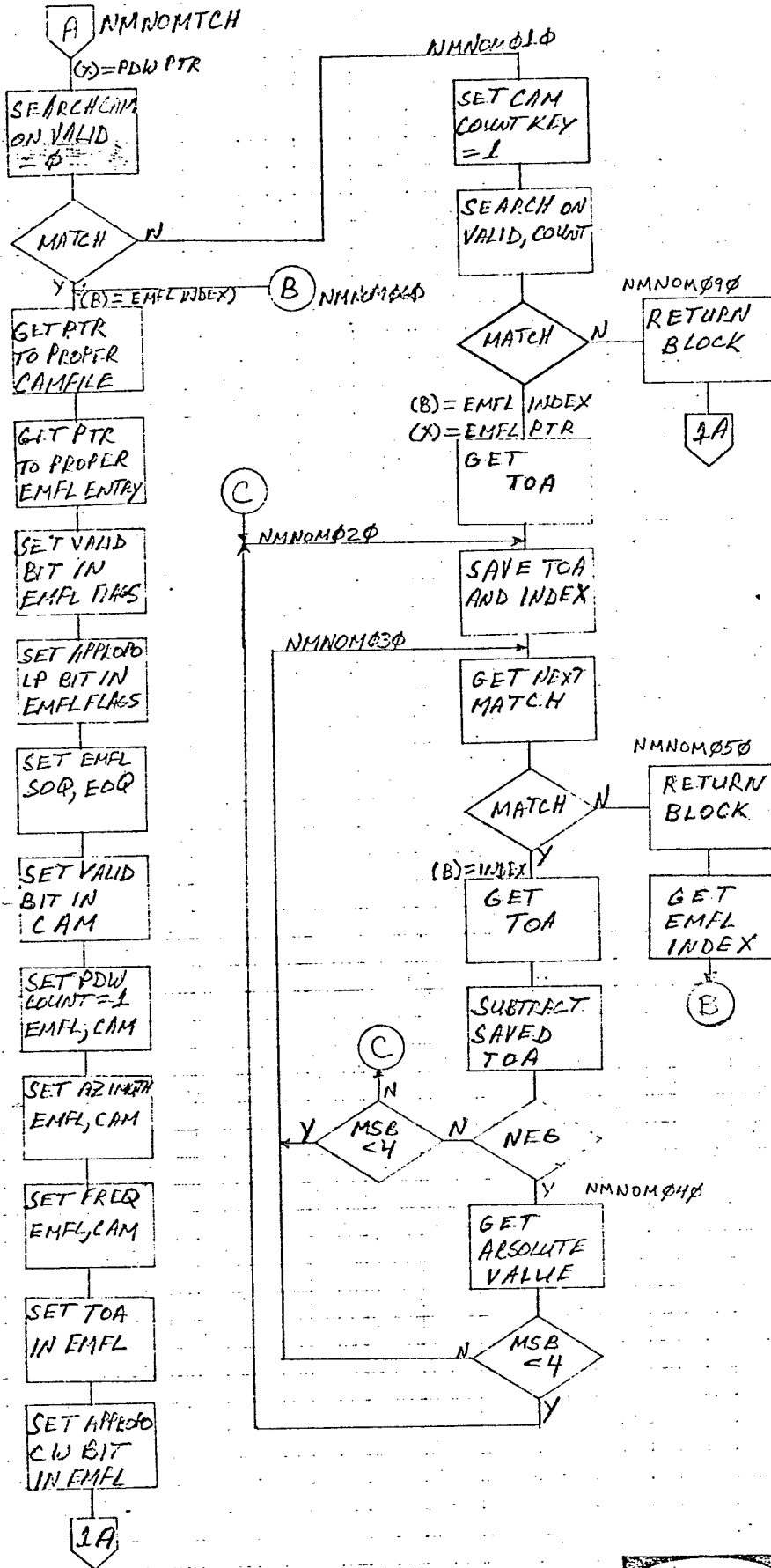
SHEET 5 OF 19

TEMPORARY
PURGE
MOD.
(SI'S PURGE)



FLOW CHART

REMARKS



NOMATCH = EMFL FULL
IE. NEW EMITTER
OVERFLOW

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PROGRAM ROUTINE SUBROUTINE ACRONYM			
JEWIS SORTER - NESU			
LOGIC IDENT NO	PREPARED BY	DATE	
49956			
NUMBER NMNOMTCH		SHEET 6 OF 19	

A NMULTMCH
 (B) = PTR TO SORTBUF
 (A) = COUNT OF ENTRIES
 (X) = PDW PTR

NMULT000
 GET NEXT
 INDEX
 FROM BUF

GET
 EMFL
 ADDRESS

CALC
 |AZ - AZ PDW|
 AND SAVE

CALC
 |F - F PDW|
 AND SAVE

CALC
 S = ΔAZ + ΔF
 AND SAVE

DONE

NSORT
 SORTBY
 S

1ST
 =
 2nd

N 2B

KEEP ALL
 S = 1ST

NSORT
 SORTBY
 ΔAZ

1ST
 =
 2nd

N 2B

KEEP ALL
 ΔAZ = 1ST

NSORT
 SORTBY
 ΔF

1ST
 =
 2nd

N 2B

GA

SORTBUF ENTRIES:

WD0: EMFL INDEX
 WD1: ΔAZ
 WD2: ΔF
 WD3: S

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PROGRAM/ROUTINE/SUBROUTINE ACRONYM

LEWS SORTER - NESU

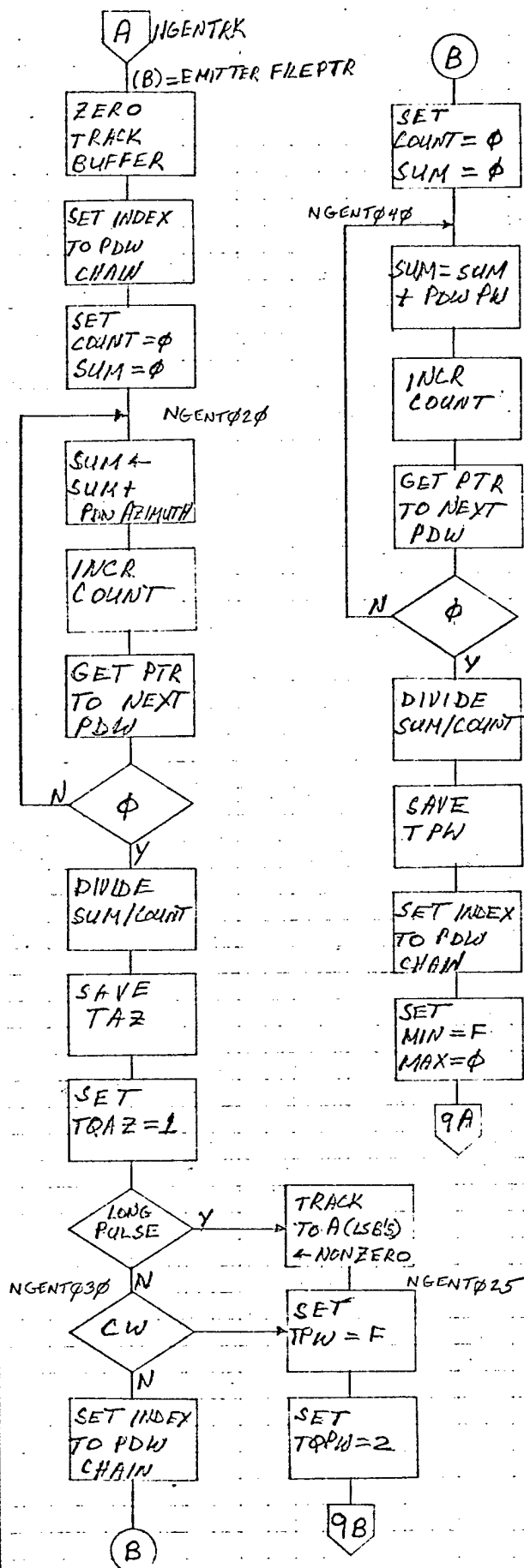
CODE IDENT BY
 49956

REPAIRED BY

DATE

NUMBER MULTI-MATCH

SHEET 7 OF 19



NON-ZERO TOA
INDICATES LONG PULSE

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PROGRAM ROUTINE, SUBROUTINE, ACRONYM

IEELS SORTER - NESU

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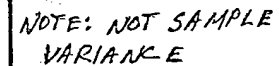
PREPARED BY

DATE

NUMBER GENERATE TRACK

SHEET 8 OF 19

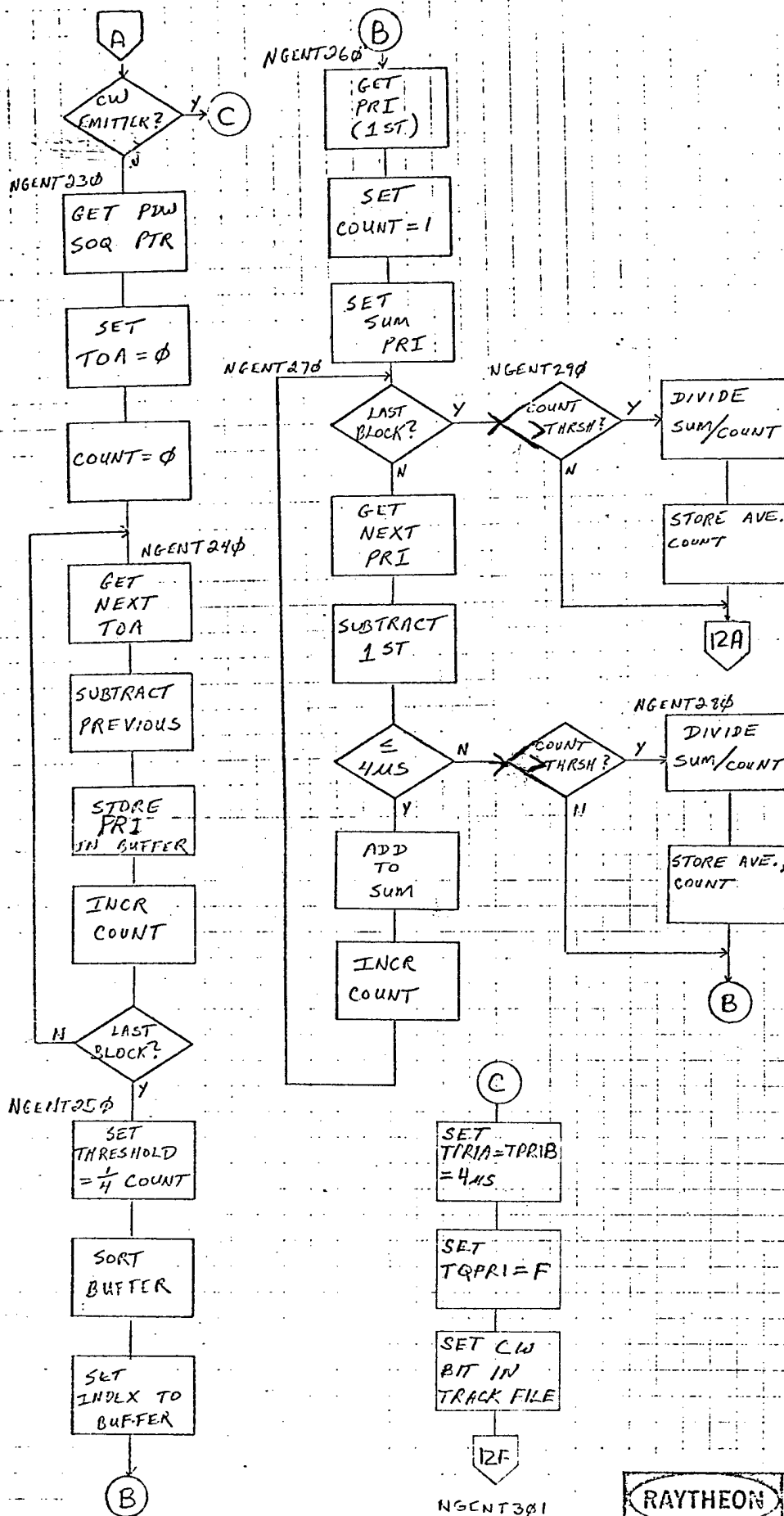
REMARKS



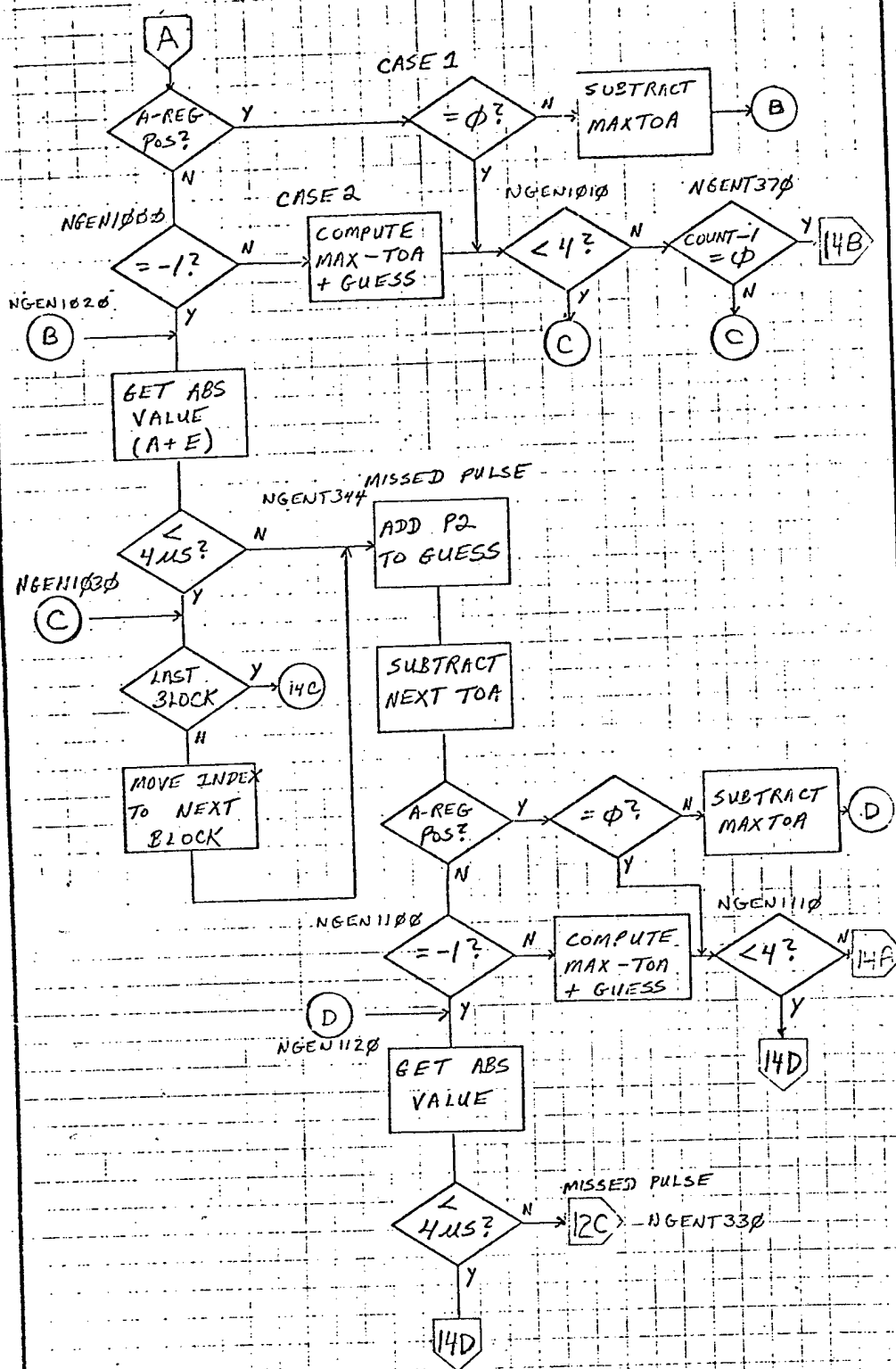
FLOW CHART

REMARKS

PRI
CALCULATION



		RAYTHEON COMPANY LEXINGTON, MASS. 02173	
PROGRAM NAME / SUBROUTINE / PROGRAM			
NEWS SORTER - NESU			
CODE IDENT NO 49956		SHEET 11 OF 19	
NUMBER GEN TRK		SHEET 11 OF 19	



PRI CHAIN
CALCULATION -
TOA WRAPAROUND
PROBLEM

MAXTOA = constant
= 100000₁₆

P1 is first
avg PRI

P2 is 2nd
avg PRI

CASE 1 : GUESS = MAX - N N = 0, 1, 2, 3
 ACTUAL = M M = 3, 2, 1, 0

GUESS - ACTUAL = LARGE POS NO., I.E., MAX - N - M > 2₁₆
THEREFORE, NEED N + M < 4, ELSE POSSIBLE MISSED PULSE.
IF A-REG POS AND NON-ZERO, THEN COMP ((GUESS - ACT) - MAX) = N + M

CASE 2 : GUESS = M M = 0, 1, 2, 3
 ACTUAL = MAX - N N = 3, 2, 1, 0
GUESS - ACTUAL = LARGE NEG. NO., M - MAX - N
THEREFORE, N + M < 4, ELSE ERROR.
IF A NEG AND N ≠ -1, THEN
MAX - ACT + GUESS = MAX - (MAX - N) + M = N + M

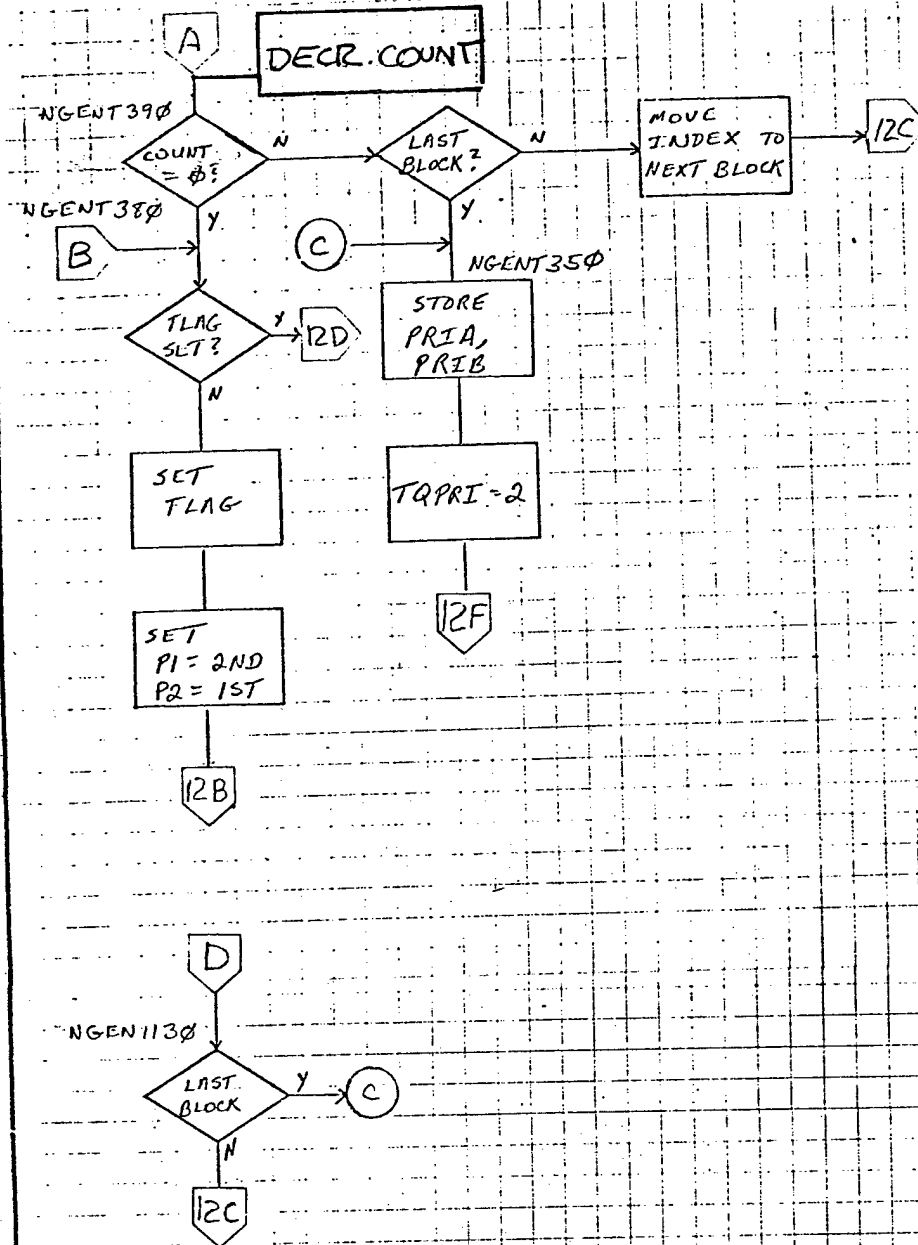
PRI chaining is
an attempt to
search for
dual stagger PRI

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49956		JEWIS SORTER - NESU	
NUMBER		SHEET 13 of 19	

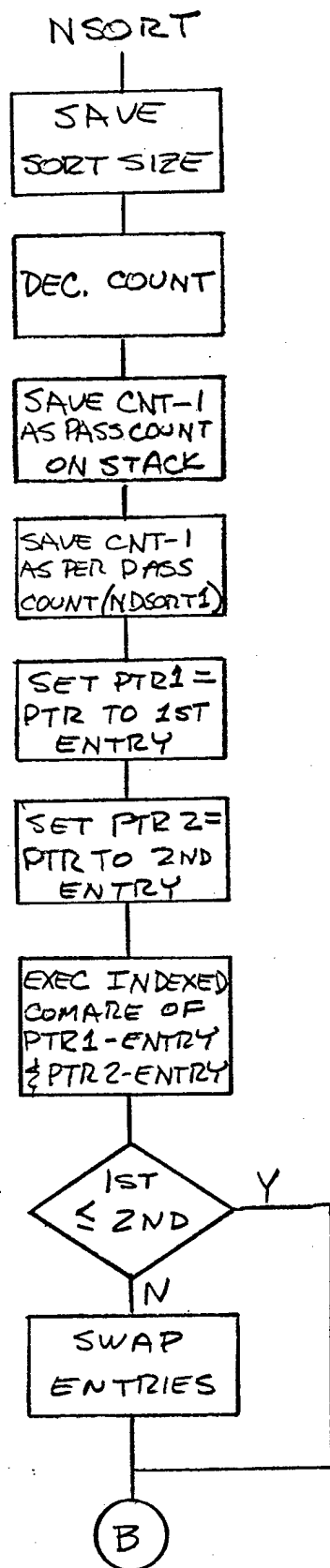
FLOW CHART

REMARKS

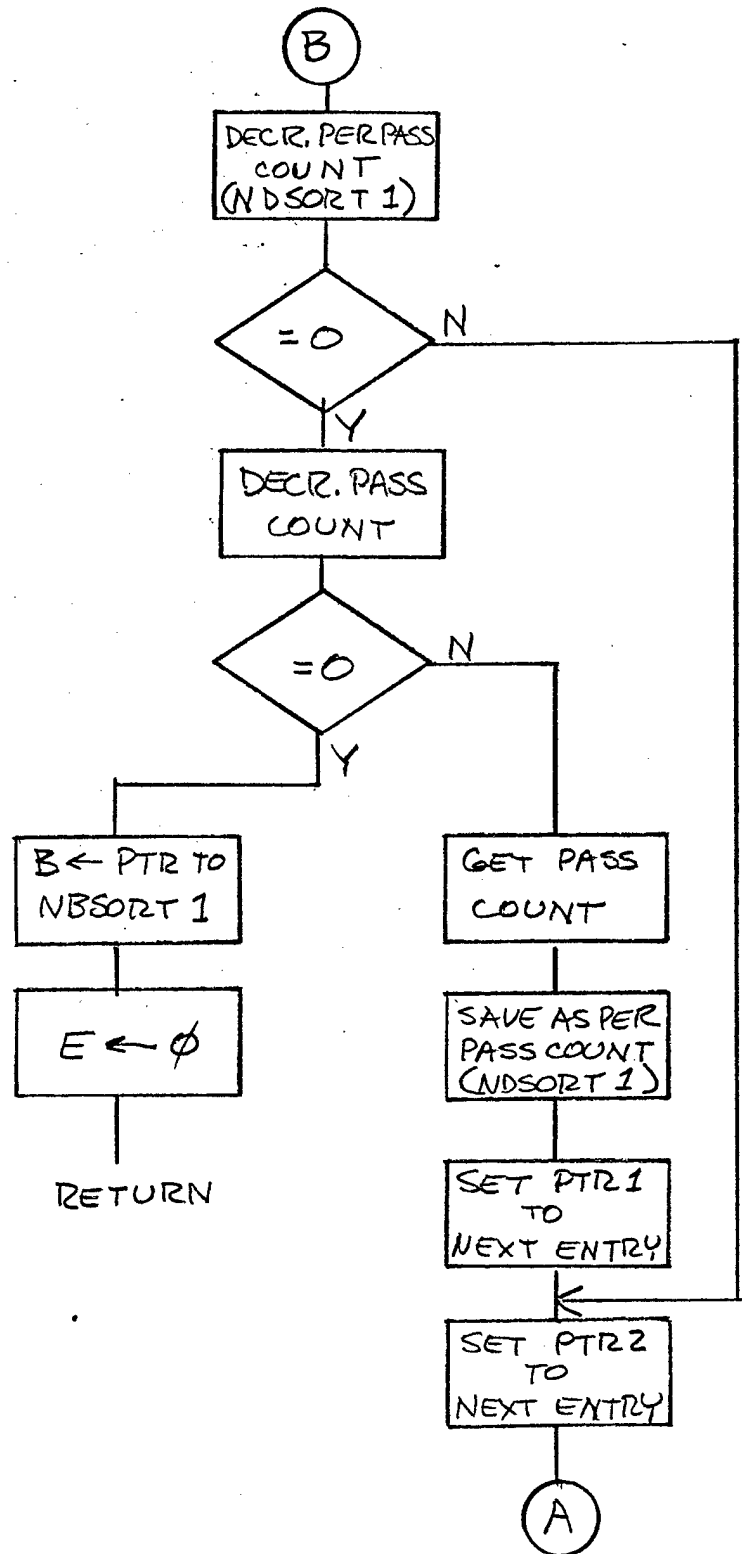
PRI CHAIN
CALCULATION



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PROCESSING ROUTINE / SUBROUTINE / ACRONYM			
JENS SORTER - NESU			
CODE IDENT NO.		49956	
NUMBER		SHEET 14 of 10	



NBSORT 1 contains (E)-word entries
 (E) is count (GT 1)
 (A) is word to sort on (0-3)
 (B) is entry size (max=4)



NTRKOUT

WAIT FOR
FREE HI
MSG BUFSTORE PDW
PTR IN
MSG BUFSET VALID
BIT IN
TRK FILEMOVE TRK
FILE TO
MSG BUFSEND NEW
EMITTER
ALERT TO SUP

RETURN

NTAOA DEC

GET PTR
TO 1ST
PDWIS
IT
Φ

RETURN

AZDEC
DEC AOA
FOR GIVEN
PDWGET PTR
TO NEXT
PDW

AZDEC

GET PDW
AZIMUTHGET PROPER
AOA COUNT

Φ

DECR
AOA COUNT

RETURN

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PROGRAM/ROUTINE/SUBROUTINE ACRONYM

LEWIS SORTER - NESU

49956

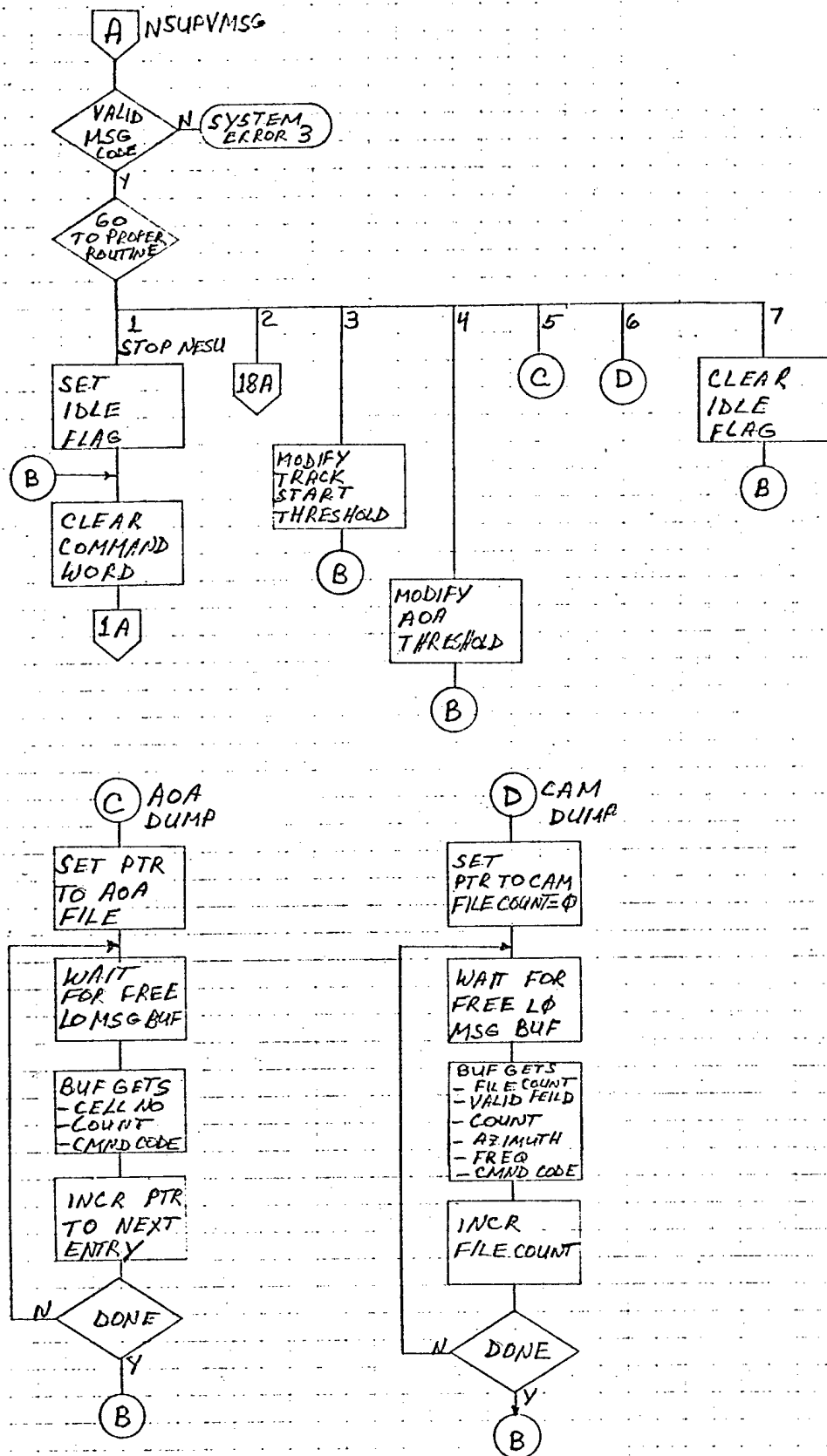
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NUMBER OF TRACK ROUTINES SHEET 16 OF 19

FLOW CHART

REMARKS



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PROGRAM ROUTINE/SUBROUTINE ACRONYM

NEWS SORTER - NESU

49956

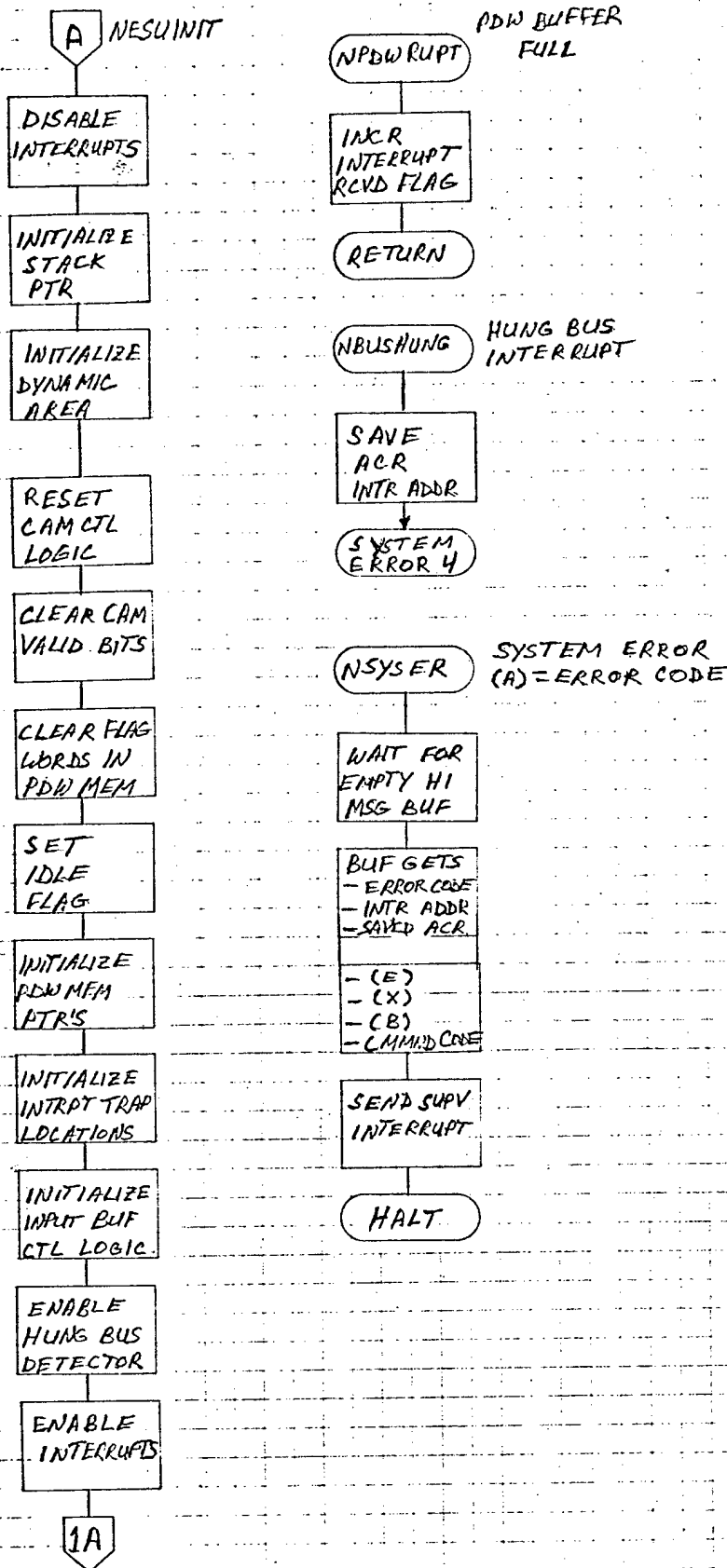
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NUMBER SUPV CMD ASPIC SHEET 17 OF 19

FLOW CHART

REMARKS



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PROGRAM ROUTINE SUBROUTINE ACRONYM

NEWS SORTER - NESU

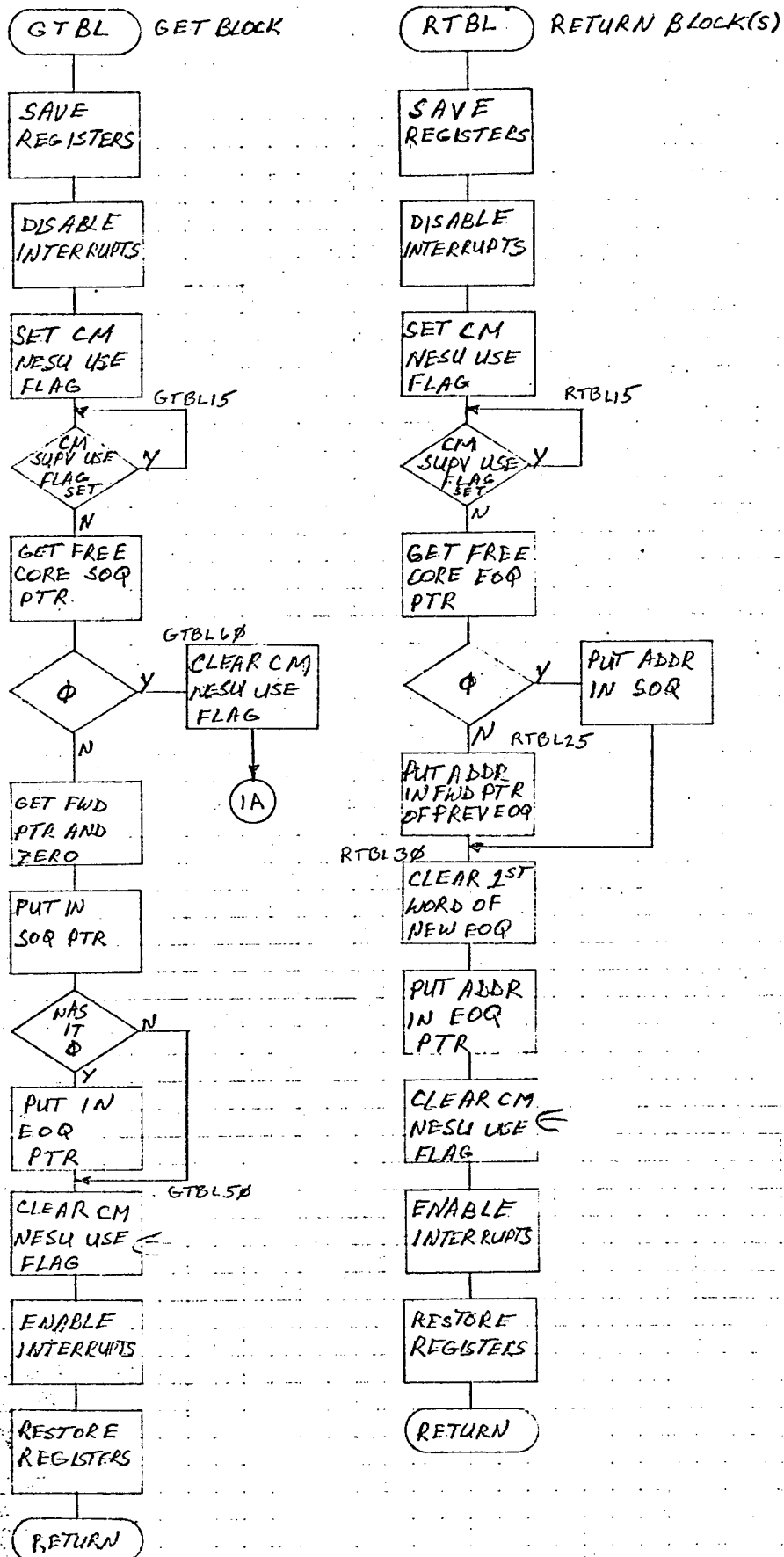
CODE IDENT NO
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DATE

NUMBER INITIALIZER

SHEET 18 OF 19



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PROGRAM/ROUTINE/SUBROUTINE/ACRONYM IEWS SORTER - NESU			
LOGSHEET NO. 49956	PREPARED BY	DATE	
NUMBER CORE MANAGER		SHEET 19 OF 19	